Federal Fiscal Year 2021 Strategic Plan for Traffic Records Improvements

Prepared for:

National Highway Traffic Safety Administration,
U.S. Department of Transportation

Submitted by:

Executive Office of Public Safety and Security's Office of Grants and Research in conjunction with the Massachusetts Traffic Records Coordinating Committees

July 3, 2020 – updated August 28, 2020

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1.0 BACKGROUND

1.1 Introduction

This FFY 2021 update to the Commonwealth of Massachusetts' Strategic Plan for Traffic Records Improvements was developed by the Massachusetts Executive Office of Public Safety and Security's (EOPSS) Office of Grants and Research (OGR), with support from the Commonwealth's Executive-level and Working-level Traffic Records Coordinating Committees (TRCC).

The purpose of this document is to provide traffic records stakeholders in the Commonwealth with a strategic plan for the improvements of core traffic records systems. The plan is based primarily on recommendations and considerations identified through the 2019 Commonwealth of Massachusetts Traffic Records Self-Assessment.

The Executive-level TRCC voted to approve this plan update on May 18, 2020, empowering OGR to make any remaining minor edits before submission.

A TRCC is a statewide stakeholder forum to primarily facilitate the selection, implementation, and evaluation of projects to improve a state's core traffic records systems. The Massachusetts TRCCs are a partnership of representatives from the highway safety, transportation, law enforcement, criminal justice, and public health professions. The Working-level TRCC (WTRCC) and the Executive-level TRCC (ETRCC), with this plan as a guide, strive to improve the accessibility, accuracy, completeness, integration, timeliness, and uniformity of the core traffic records systems listed below. It is expected this will lead to better problem identification and countermeasure selection, program implementation, and program evaluation by the above mentioned professions in Massachusetts.

The Secretary of Public Safety and Security oversees OGR, which is the lead entity in the Commonwealth for the application for and administration of federal highway safety funding from the National Highway Traffic Safety Administration (NHTSA), including those funds for traffic records improvement.

In this role, the Secretary serves as the Governor's Representative for Highway Safety.

The ETRCC is chaired by the Undersecretary of Forensic Science and Technology for EOPSS. The WTRCC is chaired by OGR's Highway Safety Division Director, who also serves as vice chair of the ETRCC. The State Traffic Records Coordinator, an employee of OGR, serves as vice chair of the WTRCC. TRCC purposes and responsibilities are enumerated in the TRCC charters in Section 1.2 and 1.3.

The Commonwealth's traffic records systems are comprised of the following six core traffic safety information systems that are accessible to varying degrees to highway safety professionals, related disciplines, and the public:

Crash Data System

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Crash Data Manager

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Driver License/History Data System

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Injury Surveillance/EMS Data System

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Roadway Data System

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Citation/Adjudication Data System

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Interim Director

Merit Rating Board

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Vehicle Registration Data System
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1.2 Role of the Working-Level TRCC

The WTRCC is the primary means by which communication and coordination are facilitated and perpetuated between collectors, custodians, and users of data that make-up the Commonwealth's traffic records systems.

The WTRCC organization, mission, vision, purpose, governance, and membership are enumerated in the WTRCC Charter.

Commonwealth of Massachusetts

Working-level Traffic Records Coordinating Committee (WTRCC)

FFY 2020-2021 Charter

ORGANIZATION

By recommendation of the National Highway Traffic Safety Administration (NHTSA) and the Commonwealth of Massachusetts' strategic planning activities, the Executive Office of Public Safety and Security (EOPSS) convened the first meeting of its Executive-Level Traffic Records Coordinating Committee (ETRCC) on January 22, 2010. The Commonwealth's prior Traffic Records Coordinating Committee (TRCC) then became a broad, working-level stakeholder group known as the Working-Level TRCC (WTRCC). The purpose of a two-tier TRCC was to establish and coordinate strategic, long-term planning activities at an executive-level and to continue to identify needs and solutions at a working-level. In Massachusetts, the ETRCC and WTRCC share the same mission and vision.

MISSION

Through the coordinated efforts of its member organizations, provide a forum for the creation, implementation, management and dissemination of accessible, accurate, complete, integrated, timely, and uniform traffic records data to aid decision-makers working to reduce transportation-related fatalities, injuries, and economic losses in Massachusetts.

VISION

Save lives and reduce injuries on Massachusetts roadways by using efficient processes to collect, store, and analyze complete and accurate traffic safety information and by making it freely available to all safety stakeholders.

PURPOSE

Ensure that accurate, complete, and timely traffic safety data is collected, integrated, analyzed, and made available for decision-making by ETRCC and WTRCC member organizations and other public and private professionals. In accordance with the requirements contained in the Federal Register, Vol 83, No. 17, January 25, 2018, Section 1300.22, key functions of the WTRCC will include, but not be limited to:

1.   Provide a forum for the discussion of highway safety data and traffic records issues and report on any such issues to the agencies and the organizations in the Commonwealth that create, maintain and use highway safety data and traffic records;

2.   Include representatives from the six core data systems that make up a State Traffic Records system (crash, citation, driver, vehicle, roadway, and injury surveillance systems) as well as users, collectors, and providers of traffic safety data;

3.   Consider the views of and facilitate discussion between organizations in the Commonwealth that are involved in the administration, collection and use of the highway safety data and traffic records system;

4.   Represent the interests of the WTRCC to outside organizations, and the ETRCC's interest if authorized by that body to do so;

5.   Assist ETRCC and WTRCC members applying for public and private funds to support and improve traffic records;

6.   Under the direction of the ETRCC, periodically review the status of selected traffic records data systems and provide feedback on the impact of any proposed changes on stakeholders;

7.   Organize and conduct working groups as appropriate to address technical and programmatic needs of the WTRCC and the ETRCC's if authorized by that body to do so;

8.   Document its collective support of the Strategic Plan for Traffic Records Improvement to the ETRCC and assure that the plan is appropriately updated each year for ETRCC approval in the areas of: data system progress, deficiencies, benchmarks, and performance measures; project progress, challenges,

benchmarks, and performance measures; and documenting progress towards addressing the latest NHTSA and FHWA assessments;

9.   Review proposed projects submitted in response to the Commonwealth's periodic Section 405c application process (administered by the EOPSS's Office of Grants and Research (OGR) and provide project recommendations to the ETRCC; provide monitoring assistance, implementation support, and reporting to the ETRCC on projects approved for funding.

Notwithstanding the above, the WTRCC recognizes:

•   The responsibility of its member agencies to work collaboratively to achieve the statewide vision for traffic safety information systems;

•   The responsibility of its member agencies to manage their own safety information systems to accomplish their mission by improving internal business processes;

•   The need to create a collective sense of responsibility among its member agencies for developing and sharing safety data in support of the State's highway safety mission in a manner that minimizes cost, duplication of effort, and inefficiencies;

•   The need to ensure regular communication with the Commonwealth's ETRCC regarding the issues they face at the day-to-day working level; and

•   The need to work within their organizations to implement the recommendations of the *Commonwealth of Massachusetts Traffic Records Assessment*, 2014.

GOVERNANCE OF WTRCC

The Commonwealth's Traffic Records Coordinator will be appointed by the Highway Safety Division Director of the EOPSS/OGR to support both the ETRCC and the WTRCC. The Highway Safety Division Director of the EOPSS/OGR will serve as the chair of the WTRCC. The Traffic Records Coordinator will be the WTRCC vice chair and will serve in the chair's absence.

Each WTRCC member organization (see below) shall designate its member(s) of the WTRCC. WTRCC members will be renewed annually.

The WTRCC will meet a minimum of three times per year. A majority vote will be sufficient for WTRCC business matters. Each member organization will have one vote.

I accept this Commonwealth's WTRCC Charter. This approval is effective through September 30, 2021.

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Print Name: Signature   Date

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Title: Organization

WTRCC MEMBER ORGANIZATIONS

- Boston Region Metropolitan Planning Organization/ Central Transportation Planning Services

- Regional Planning Agencies (up to three recommended by the Massachusetts Association of Regional Planning Agencies)

- Massachusetts Department of Public Health – Bureau of Health Care Safety and Quality

- Massachusetts Department of Public Health – Injury Surveillance System

- Boston Emergency Medical Services/Boston Public Health Commission

- MassDOT/Registry of Motor Vehicles

- MassDOT/Merit Rating Board

- MassDOT/Highway Division

- MassDOT/Office of Planning

- Local Police (One member of the Massachusetts Chiefs of Police Association, one member of the Association's Technology Committee, and the Boston Police Department)

- University of Massachusetts/UMassSafe

- Executive Office of Public Safety and Security/Department of Fire Services

- Executive Office of Public Safety and Security/Office of Grants and Research

- Executive Office of Public Safety and Security /Office of the Chief Medical Examiner

- Executive Office of Public Safety and Security/Massachusetts State Police

- Executive Office of Public Safety and Security/Municipal Police Training Committee

- Executive Office of Technology Services and Security

- Administrative Office of the Trial Courts

Current advisory members, with no voting powers:

- National Highway Traffic Safety Administration (NHTSA)

- Federal Highway Administration (FHWA)

- Federal Motor Carrier Safety Administration (FMCSA)

1.3 Role of the Executive-Level TRCC

The ETRCC provides a forum for senior decision-makers to ensure optimum communication and coordination occurs between collectors, custodians, and users of data involved with the Commonwealth's traffic records systems. The ETRCC primarily does this by reviewing, refining, and approving recommendations resulting from the WTRCC.

The ETRCC's organization, mission, vision, purpose, governance, and membership are enumerated in the ETRCC Charter.

Commonwealth of Massachusetts

Executive-Level Traffic Records Coordinating Committee

FFY 2020-2021 Charter

ORGANIZATION

By recommendation of the National Highway Traffic Safety Administration (NHTSA) and the Commonwealth of Massachusetts' strategic planning activities, the Executive Office of Public Safety and Security (EOPSS) convened the first meeting of its Massachusetts Executive-Level Traffic Records Coordinating Committee (ETRCC) on January 22, 2010. A NHTSA Traffic Records Assessment for Massachusetts, which took place March 2009, recommended the Commonwealth "establish the Executive-Level of the Traffic Records Coordinating Committee (ETRCC) to ensure full support and authorization of the TRCC and its members by the executives of all agencies in whose area of responsibility the components of the traffic records system fall." To that end, EOPSS invited owners of the core traffic records systems and a small representative sample of data consumers and collectors (see below) to join the ETRCC. Broader stakeholder participation remains with the Working-level TRCC (WTRCC). In Massachusetts, the ETRCC and WTRCC share the same mission and vision.

MISSION

Through the coordinated efforts of its member organizations, provide a forum for the creation, implementation, management and dissemination of accessible, accurate, complete, integrated, timely, and useful traffic records data to aid decision-makers working to reduce transportation-related fatalities, injuries, and economic losses in Massachusetts.

VISION

Save lives and reduce injuries on Massachusetts roadways by using efficient processes to collect, store, and analyze complete and accurate traffic safety information and make it freely available to all safety stakeholders.

PURPOSE

Ensure that accurate, complete, and timely traffic safety data is collected, integrated, analyzed, and made available for decision making by ETRCC member organizations and other public and private professionals. In accordance with the requirements contained in the Federal Register, Vol 83, No. 17, January 25, 2018, Section 1300.22, key functions of the ETRCC will include, but not be limited to:

1.   Maintain authority to review any of the Commonwealth's highway safety data and traffic records systems and any changes to such systems before the changes are implemented;

2.   Provide a forum for the discussion of highway safety data and traffic records issues and report on any such issues to the agencies and the organizations in the Commonwealth that create, maintain, and use highway safety data and traffic records;

3.   Consider and coordinate the views of organizations in the Commonwealth that are involved in the collection, administration, and use of highway safety data and traffic records systems, and represent those views to outside organizations;

4.   Represent the interests of the ETRCC and the WTRCC to outside organizations;

5.   Review and evaluate new technologies to keep the highway safety data and traffic records systems up-to-date;

6.   Assist ETRCC and WTRCC members applying for public and private funds to support and improve traffic records;

7.   Assure the Commonwealth's Strategic Plan for Traffic Records Improvement incorporates IT strategies and business plans and documents all sources of funding for data improvement projects in the plan;

8.   Approve the Commonwealth's annual Section 405c application, including projects supported by this funding source, submitted by EOPSS's Office of Grants and Research (OGR) to NHTSA;

9.   Review and provide input on other federal traffic records funding received by EOPSS/OGR; and

10.   Approve annually the membership of the ETRCC and the WTRCC, the TRCC coordinator, updates based on Section 405 guidance to the Commonwealth's Strategic Plan for Traffic Records Improvement, and performance measures to be used to demonstrate quantitative progress in the accuracy, completeness, timeliness, uniformity, accessibility or integration of at least core highway safety database.

Notwithstanding the above, the ETRCC recognizes:

- The responsibility of its member agencies to work collaboratively to achieve the statewide vision for traffic safety information systems;

- The responsibility of its member agencies to manage their own safety information systems to accomplish their mission by improving internal business processes;

- The need to create a collective sense of responsibility among its member agencies for developing and sharing safety data in support of the Commonwealth's highway safety mission in a manner that minimizes cost, duplication of effort, and inefficiencies;

- The need to ensure regular communication with the Commonwealth's WTRCC regarding the issues they face at their executive-level;

- The importance of member agencies engaging in open communication to maximize the effectiveness, compatibility, and interoperability of any federally-funded projects in conjunction with the Strategic Plan for Traffic Records Improvements and will facilitate compliance with all federal reporting requirements.

GOVERNANCE OF THE ETRCC

The Commonwealth's Traffic Records Coordinator will be appointed by the Highway Safety Division Director at OGR to support both the ETRCC and the WTRCC. The ETRCC will be chaired by the EOPSS Undersecretary for Forensic Science and Technology. The Highway Safety Division Director at OGR will serve as vice chair to serve in his/her absence. Each ETRCC member organization shall designate its member of the ETRCC.

ETRCC members will be renewed each year. The ETRCC will meet a minimum of once per year and more as needed.

Each ETRCC member organization will have one vote. The ETRCC may extend membership to additional organizations and representatives by majority vote. Votes requiring a 2/3 majority of the ETRCC include approvals of a Strategic Plan for Traffic Records Improvement, a Section 405c application, and projects for Section 405c funding. A majority vote will be sufficient for normal ETRCC business matters.

I accept the Commonwealth's ETRCC Charter. This approval is effective through September 30, 2021.

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Print Name: Signature   Date

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Title: Organization

ETRCC MEMBER ORGANIZATIONS

- Massachusetts Association of Regional Planning Agencies
- Massachusetts Department of Public Health – Injury Surveillance Program

- Massachusetts Department of Public Health – Bureau of Health Care Safety and Quality

- MassDOT/Office of Planning

- MassDOT/Registry of Motor Vehicles

- MassDOT/Merit Rating Board

- MassDOT/Highway Division

- Massachusetts Chiefs of Police Association

- Executive Office of Public Safety and Security/Undersecretary for Forensic Science and Technology

- Executive Office of Public Safety and Security/Department of Criminal Justice Information Services

- Executive Office of Public Safety and Security/Municipal Police Training Committee

- Executive Office of Public Safety and Security/Massachusetts State Police

- Executive Office of Public Safety and Security/Office of Grants & Research

- Executive Office of Technology Services and Security

- Administrative Office of the Trial Court

Current advisory members, with no voting powers:

- National Highway Traffic Safety Administration (NHTSA)

- Federal Highway Administration (FHWA)

- Federal Motor Carrier Safety Administration (FMCSA)

2.0 Traffic Records Systems

The Massachusetts core traffic records systems are managed by the following agencies:

- Registry of Motor Vehicles Division (RMV) of the Massachusetts Department of Transportation (MassDOT) manages the crash, driver history, and vehicle registration systems;

- Merit Rating Board (MRB) of MassDOT /RMV maintains operator driving history records consisting of at-fault accident claim records, comprehensive claim records, out-of-state incidents, and civil and criminal traffic citation information;

- Administrative Office of the Trial Court (AOTC) manages adjudication information;

- MassDOT's Office of Transportation Planning (OTP) manages the road inventory file; and

- Massachusetts Department of Public Health (MDPH) and the Center for Health Information and Analysis (formerly known as the Division of Healthcare Finance and Policy) manage injury surveillance, EMS, and other healthcare/trauma/insurance/death/behavioral risk factor information-related systems.

The following section provides a brief overview on each system. **Key changes to these systems in the last year or expected in FFY 2021 are bolded and underlined below.**

2.1 Crash Data System

System Key Points

The RMV operates the Commonwealth's Crash Data System (CDS). Reports of more than 150,000 motor vehicle crashes are received annually by the RMV.

Total Number of Crashes in IMPACT Portal	
Year	**Crashes**
2017	145,068
2018	142,344
2019	138,139

As of April 2020, the 2018 and 2019 files are 'preliminary'.

Agency Reporting	YTD '20	2019	2018	2017	2016	2015
Electroinc Submissions	90% (328)	87.98% (315)	77.65% (278)	71.2% (236)	59.7% (214)	51.39 (184)
Paper Submissions	30	43	80	103	144	174
This includes Campus Police, Non-police, Other Police and Transit Police	358	358	358	358	358	358

Approximately 90 percent of crash reports are received electronically from state and local law enforcement agencies.

The remainder are received on paper using either the Motor Vehicle Crash Police Report **(last revised in November 2019)**, or both methods. Police reports may be used to document the date, time, location, environment, and characteristics of a crash. The crash reporting criterion for both police and operators are: Any crash involving damage to any one vehicle or property exceeding $1,000, or any injury or fatality.

The MassDOT Highway Division, Traffic Engineering and Safety Section developed an automated process for attaching location coordinates to crash master records that has been in use since 2006. This process is based on standards for location data on crash reports coupled with an extensive set of location matching algorithms that can take the street names, route numbers, exit numbers, mile markers and other location data as supplied in crash reports.

A new geocoding tool IMPACT was implemented in July of 2019. The automated geocoding rate is in excess of 83% and total geocoding is at 95.6% for all 2019 crashes. While the new system has put a lot in place to improve

geocoding, it also includes features that will not automatically geocode crashes that had been geocoded in the past such as when the LEAs use an exit number of an interstate as the location point, the crash would have been assigned to that location, but now it also checks the posted speed and if the police input the posted speed as less than 40 mph, the system will not allow the crash to be automatically geocoded and must be manually reviewed. So while this may lower the automated geocoding rate, the locations are improved.

Continuing improvements have been made to these algorithms to try and improve geocoding and offset the data quality issues surrounding electronic submission. Extensive updates have been made to the MassDOT Planning Roadway Inventory road names (a project completed in 2014) to also improve the matching/geocoding rate. Crashes that are unable to be automatically geocoded are reviewed and located manually, depending on staffing availability. There were improvements implemented with IMPACT to accept the newer roadway information, however CDS has not been updated to reflect some of the improvements in place from Planning's roadway file.

Geocoder algorithm improvements have enabled the statewide crash record geocoding rate to remain above 90% for 2018 and 2019: at this point **96.2% for 2018, 95.6% for 2019, 93.4% ytd for 2020.**

System Performance Measurement(s)

RMV has had a benchmark/performance measure to evaluate the accuracy and completeness of the CDS by tracking the number of submitted reports that are rejected that did not meet the minimum criteria for acceptance to the system. For FFY 2020, the benchmark/performance measure was to improve the accuracy and completeness of the CDS by decreasing the number of crash reports rejected for not meeting the minimum criteria to be accepted into the system from 1,466 between April 1, 2018 to March 31, 2019 to 1,390 or less between April 1, 2019 to March 31, 2020. Through 405-c funded project work, it was determined that most reports that were rejected were not for reasons of accuracy or completeness, but rather for one of two major categories; duplicate report or report received after the reporting year has closed. These two categories make up to 90% of the reports. When this measurement was originally chosen as one that needed to be addressed and corrected, it was due to the overwhelming number of monthly rejected reports. It was important to determine what mistakes needed to be

address directly at the law enforcement agencies levels. However, once analyses of the rejected reports was able to be made through an automated process that pulls out the duplicate and closed year reports, the number decreased significantly. For the 2019- 2020 reporting period, the total number of "true" rejected reports is 79. These are actual officer mistakes and this is a manageable number that the Law Enforcement Liaison can address at the department or statewide level. In addition, a process to ensure the resubmittal of those rejected reports has been adopted. Therefore, this performance measurement is being closed.

Proposed new benchmark and performance measure:

Increase acceptable resubmissions to CDS of previously rejected reports within a test group of 30 local police departments from benchmark to be established in October 2020 by 3% by 12/31/21. Provide mid-project progress toward the target as of 5/31/21.

System Accessibility

As of summer 2019 public access to data in the CDS is through the IMPACT Crash Data Portal at https://apps.impact.dot.state.ma.us/cdp/home

Training & Technical Assistance Opportunities

RMV has a Crash Data System Law Enforcement Liaison (LEL) that provides training and technical assistance to state and local law enforcement agencies on the CDS. The LEL has been successful in updating the crash module used for all new officer police trainings. She has worked for three years with the Massachusetts Police Training Committee, MPTC, who oversees the police academy curriculum and stands for all Massachusetts and state police academies, including the MBTA to update the crash module that is presented to all new officers during training. The curriculum now has an updated Crash Module that reflects critical points and procedures when reporting a crash. Also, the LEL attends many of the academy classes during the crash model as a guest in order to answer questions and clarify information.

The RMV participated in the UMassSafe's Tool Improving Crash Report Reviews project and helped launch it to law enforcement in early 2020. It is anticipated that the guidelines created in this project will be an effective tool to assist law enforcement in completing the narrative portion of the crash report.

Recent Developments & Challenges

The RMV, along with UMassSafe, will start work in summer 2020 on a new 405-c funded project to build on the success of the 2018 Accept With Warning project. The prior project results have proven to be a valuable when meeting with law enforcement agencies to discuss their agencies' crash reporting. The next phase will provide additional resources to support the Law Enforcement Liaison by focusing on working with LEA RMS vendors to implement crash data validation rules consistent with the statewide crash system.

The E-Crash Manual continues to serve as the data dictionary of the CDS and RMV works closely with UMassSafe to maintain up to date information in the manual. In summer 2020 UMassSafe will launch a 405-c funded project to enhance and expand the E-Crash Manual available at masscrashreportmanual.com.

Also in summer 2020 Boston Police Department will undertake a 405-c funded project to improve its electronic crash reporting and at the same time the Massachusetts State Police will use 405-c funding to improve its training for crash reporting for new and current troopers.

2.2 Roadway Data System

System Key Points

The MassDOT Office of Transportation Planning (OTP) maintains the Road Inventory File (RIF) for Massachusetts. This file, which contains more than 36,000 centerline miles and more than 71,000 lane miles of roads, serves as the foundation for the State's Geographic Information System (GIS).

This file is used for a variety of purposes, such as:

- Identifying functional classification, jurisdiction, and National Highway System (NHS) status of all roadways in the State;

- Helping to fulfill the Federal Highway Administration's Highway Performance Monitoring System (HPMS) reporting requirements;

- Determining centerline miles by city/town for allocating State Aid Funds to communities; and

- Supporting development of safety improvement projects.

The Traffic Engineering Section of the Highway Division of MassDOT works in concert with RMV to locate and geocode records in the CDS. The CDS uses roadway information as the basis for locating crashes. Approximately 90% of crash records are matched to a location automatically. However, the accuracy of crash location data depends on both the characteristics of the roadways (and the degree of difficulty in describing crash location due to the complexity of roadway geometry), and degree of precision by police in correctly providing and coding crash location information in their reports.

Traffic counts and pavement condition ratings are obtained on a three-year cycle, and this data is used to update the RIF on a continuous basis. While Massachusetts historically has used ortho-photography to verify the accuracy and completeness of road features and characteristics, the Commonwealth moved to use of a video log for ongoing verification activities of state-owned roadways.

System Performance Measurement(s)

No information provided.

System Accessibility

No information provided.

Training & Technical Assistance Opportunities

MassDOT's Office of Transportation Planning continues work on its data dictionary for this system.

Recent Developments & Challenges

MassDOT's Office of Transportation Planning has new GIS team member serving as GIS QC Coordinator. This position is now documenting our data

management processes as well as developing metadata standards. GIS QC Coordinator meets regularly with Road Inventory editors to understand their workflows and install best practices throughout the process.

2.3 Driver Data System

System Key Points

Driver records are created by the RMV and kept in ATLAS, but the MRB maintains operator driving history records consisting of at-fault accident claim records, comprehensive claim records, out-of-state incidents, and civil and criminal traffic citation information. ATLAS includes records for approximately five million commercial and non-commercial drivers.

The Massachusetts State Police (MSP) Office of Alcohol Testing manages testing for blood alcohol concentration (BAC). The results from breathalyzer tests conducted in the field are broadcast to the MSP every 90 minutes. The MSP relays the information to the RMV nightly, which enables the RMV to have current information on file and to take immediate actions on cases pending receipt of BAC test results.

In 2008, the RMV, the MRB, and the Administrative Office of the Trial Court (AOTC) worked together to develop an electronic interface between the district courts and the driver history file. Virtually all adjudication decisions are transferred electronically each night by AOTC to the MRB. This information is used to suspend or revoke licenses and to make adjustments in the insured's automobile insurance premium when applicable. This change closed a significant gap in communications and has substantially improved the process of using conviction data to suspend or revoke licenses and to adjust the insured's automobile insurance premium.

System Performance Measurement(s)

No information provided.

System Accessibility

No information provided.

Training & Technical Assistance Opportunities

No information provided.

Recent Developments & Challenges

The RMV implemented the first phase of its upgraded, web-based license and registration system known as ATLAS on March 2018. The Issuance License/Driver portion was successfully implemented. Release two of ATLAS to enhance the Vehicle and Registration portion was done in November 2019. Once fully operational, ATLAS will have the capabilities to better track and integrate crash data to the driver and vehicle. Automated License and Registration System (ALARS) will contain historical data of both vehicle and operator data until spring 2020.

2.4. Vehicle Data System

The RMV manages vehicle title and registration information using ALARS, which contains approximately seven million commercial and non-commercial registrations. Below is registration and title issuance activity for 2016 – 2018.

2017	Registrations	1,315,412
	Titles	1,346,097
2018	Registrations	1,312,488
	Titles	1,353,886
2019	Registrations	1,284,719
	Titles	1,775,229

A registrant is identified with a Massachusetts driver license number or an assigned non-driver identification number if the registrant is not a driver.

Registration applications must include an insurance agent stamp and signature. A Manufacturer's Certificate of Origin or a previous title also must be presented along with an odometer reading as part of the title application. Six to eight weeks are required for title processing. After receiving the registration document, plates and expiration decals, a vehicle safety inspection is required within seven days. Thereafter, annual safety inspections are required. Odometer readings are recorded in connection with safety inspections and any required emissions inspections.

Application for title must be done within 10 days of acquiring a vehicle or trailer unless the type of vehicle is exempt from titling. Information on previous title data, including brand information, may be acquired through the National Motor Vehicle Title Information System (NMVTIS) of the American Association of Motor Vehicle Administrators (AAMVA). Massachusetts is a full participant in NMVTIS enabling immediate electronic inquiries with other NMVTIS Jurisdictions. Massachusetts also uses the Electronic Lien and Title (ELT) system. ELT enables direct interactions with lien holder institutions.

System Performance Measurement(s)

No information provided.

System Accessibility

No information provided.

Training & Technical Assistance Opportunities

No information provided.

Recent Developments & Challenges

No information provided.

2.5 Citation/Adjudication Data System

The MRB is the sole repository for all Motor Traffic Citations issued in the Commonwealth. The MRB receives copies of citations from Massachusetts police departments and courts and hearing requests and payments from violators and applies these records to an individual's driving history record.

Civil Motor Vehicle Infractions (CMVI) citations are sent directly to the MRB from the issuing police department. The MRB applies the citation to the violator's driving history record. The violator has 20 days from the date of violation to either pay the total amount due or to request a clerk-magistrate hearing. The payment or hearing request (accompanied by a $25.00 Court Filing Fee payment) is submitted to the MRB by the violator. Failure to do either action results in late and release fees being added to the citation, as well as future suspension of their driver's license or registration. If a payment is made, it is adjudicated as an admission of responsibility. If no response is provided within 20 days, the violator is found responsible and can be charged late fees and may face additional penalties, including suspension of license.

Requests for clerk-magistrate hearings along with a filing fee are processed and a file of hearing request records is sent via batch FTP transfer to Administrative Office of the Courts (AOTC). Upon disposition, AOTC transmits a file of hearing results records via batch FTP transfer to MRB. These results are uploaded to the RMV and processed, updating the operator driving history records with the submitted results. Payments from violators are processed and the citation is adjudicated as responsible.

Multiple copies of a criminal citation are delivered to the court by the issuing police department. The court forwards a copy of the criminal citation to the MRB. The MRB applies the citation to the violator's driving history record. The court is responsible for conducting a hearing and rendering a disposition in a criminal matter. Upon issuance of a disposition, the court electronically submits

the findings to the MRB. Upon receipt of the disposition, the MRB updates the citation record.

While the exchange of criminal citation adjudication results and clerk-magistrate hearing requests and results between AOTC and MRB is now almost exclusively electronic, much of citation processing remains a paper-based process. This includes audit sheets, which are completed by officers to account for every citation, specifically citations that are destroyed or voided.

The new eCitation process transmits demographic and offense-specific information captured on the Massachusetts Uniform Citation electronically and this information is then validated against the ATLAS database. The data validations built into the eCitation system, in conjunction with quality controls at the MRB, have shown promising results in improving data quality.

Operators who are issued an eCitation receive an eCitation Receipt on an 8.5x11 inch sheet of paper. The eCitation should be available for inspection in ATLAS within 72 hours, with 80.1% currently available for inspection within 24 hours. **As of spring 2020 there are 67 local Police Department using eCitation. Approximately, 92% of the Massachusetts State Police are using eCitation.**

The MRB in collaboration with the AOTC continued its efforts to streamline and improve the efficiency in the processing of criminal motor vehicle violation citations by working to add Juvenile Courts and Superior Courts to the electronic file transfer process to submit criminal traffic citation judgment records to the MRB. Testing was completed and all changes to MRB applications were migrated into the ATLAS production environment. All Juvenile Courts and 10 Superior Courts are now submitting electronic records to the MRB.

The RMV/MRB is able to promptly suspend/revoke the driver license of individuals found guilty of criminal charges by these courts. These efforts rectify any lapses in updating driving history records and ensure future records are current and sanctions promptly applied.

The registrant is identified with a Massachusetts driver license number or an assigned non-driver identification number if the registrant is not a driver.

System Performance Measurement(s)

No information provided.

System Accessibility

No information provided.

Training & Technical Assistance Opportunities

No information provided.

Recent Developments & Challenges

As of early spring 2020 the Massachusetts State Police and 67 local police departments are issuing eCitations. eCrash reporting submissions are limited at this point.

On February 23, 2020, the Hands-Free Law went into effect. As a result of the new law, the MRB begun processing warnings. As of April 2020, there have been 10,254 warnings issued for a violation of the Hands-Free law.

On April 1, 2020, the law enforcement began to cite fineable offenses under the Hands-Free law. As of April 28, 2020, there have been approximately 160 fineable offenses.

Opportunities exist for improving linkages among various system components – such as adjudications with both the vehicle and crash files, which could improve the efficiency of vehicle-based administrative suspensions and revocations, as well as to increase the ability of the data in the system to support research. These opportunities will continue to be investigated.

2.6 Injury Surveillance/EMS Data System

Massachusetts Ambulance Trip Record Information System (MATRIS) – managed by MDPH collects Emergency Medical Services (EMS) trip information that complies with the National EMS Information System (NEMSIS) dataset. The department is currently collecting both NEMSIS V2 data and NEMSIS V3, as the V3 system launched 2/28/19. **As of 3/31/20, 213 out of 313 licensed ambulance services had migrated and were submitting data to MATRIS NEMSIS V3 and 251 were approved to make the migration. The remaining will be migrated in the coming months. The NEMSIS V3 data is superior to the V2 data because DPH developed comprehensive Schematron validation rules that are enforced as a criteria for acceptance to MATRIS. After all of the services complete the migration to NEMSIS V3, DPH will review the data quality and determine updates needed to the Schematron validation rules to continue to improve quality. In FY 2020 DPH developed an RFR to contract with a vendor for hosting of the MATRIS infrastructure to address gaps in functionality and improve efficiency. Responses from vendors were received by the due date 3/12/20. The responses will be reviewed and a contract developed with a vendor. Migration to the vendor hosted infrastructure will be completed in FY 2021 and then the process can begin to submit the NEMSIS V3 data to the NEMSIS national repository.**

Massachusetts Hospital Case-Mix Data – Inpatient hospital discharge data, outpatient emergency department (ED) visit and outpatient observation stay data, collectively referred to as "Case-mix Data", are submitted by all Massachusetts acute care hospitals to the Center for Health Information and Analysis (CHIA). The relevant data include ICD-9-CM or ICD-10-CM diagnosis codes (depending on year) and external cause codes (E-codes), patient demographics, hospital facility, dates of medical care, length of stay, discharge disposition, services and procedures performed and hospital charges. Diagnostic codes describe the nature and body location of injuries and other medical conditions. E-codes describe the injury mechanism and type of person injured in a crash, e.g. MV occupant, pedestrian, cyclist, etc. In FY2015, the number of diagnosis and E-code fields available increased from 16 to an unlimited number in inpatient hospital discharge data and from 7 to an unlimited number in outpatient ED discharge data. Outpatient observation stay data continue to include only 6 diagnosis and E-code fields, although in response to a request from the MDPH, CHIA added a field for principal external cause code in observation stay data in FY 2017.

Hospitals switched from ICD-9-CM to ICD-10-CM diagnosis and external cause codes in October 2015. ICD-10-CM external cause codes will be particularly useful for monitoring traffic-related injuries as there are hundreds more traffic-related injury codes in ICD-10-CM, which provide more specific information about crash circumstances than were available in ICD-9-CM. ICD-10-CM codes also distinguishes "active" treatment of injuries from routine follow-up care, which were not differentiated in ICD-9-CM.

Massachusetts All Payer Claims Database (APCD) - includes health insurance claims data collected from commercial payers, third party administrators and public programs (Medicare and MassHealth, Massachusetts' Medicaid program) by the CHIA. Due to state health care reform law which had the aim of providing health insurance to all residents, currently 97% of Massachusetts residents have health insurance. Therefore, the APCD is one of the most comprehensive sources of state health claims data from public and private payers in Massachusetts. These data sets come both from medical insurers and from specialty insurers and administrators of "carved-out" services including pharmacy, mental health/chemical dependency, dental, and vision. While several states have All Payer Claims Databases, the Massachusetts APCD has a unique focus on the efficiencies to be achieved by having a single independent agency (the Center for Health Information and Analysis)– as opposed to multiple state agencies. While the case mix data collects data only from Massachusetts acute care hospitals, the claims data includes health care data from all health care providers regardless of care settings regardless or geographic location. The ambulance, ED, hospitalization, rehab, and pharmaceutical claims for Massachusetts motor vehicle crash victims receiving care in state and out of state are all in the Massachusetts APCD.

Trauma Registry – collected by MDPH, all hospitals that treat trauma patients submit data on all trauma inpatient discharges, all trauma observation stays, and trauma ED visits for patients who die or are transferred from the ED. These data include patient blood pressure, respiratory rate, pulse, protective devices, airbag deployment, child specific restraints, cause of injury and location of injury ecodes, hospital based drug and alcohol test results, injury date, injury city, mode of transport to hospital, abbreviated injury scale (AIS), Glasgow coma scores, complications, and comorbidities. After submission by hospitals, MDPH may add other fields such as geocoded census data and several survival probability metrics including revised trauma score, shock index, injury severity score, new injury

severity score, and AIS-based trauma mortality prediction model using up to five worst injuries, ICD-9-CM-based trauma mortality prediction model, and an indicator for multiple injuries to the same body region. The system was upgraded to include approximately 60 data elements with ICD-10-CM and AIS 2005/2008 in 2016. Enhancements were also made in 2017 to meet the NTDB 2016 and 2017 updates and ability to accept multiple submission years simultaneously.

Traumas reported to the Massachusetts Trauma Registry by Federal Fiscal Year (FFY) *		
FFY2016	FFY2017	FFY2018
89,884	55,543	61,507

*Massachusetts Trauma Registry, current as of January 22, 2020

During the FFY 2019, additional upgrades were made to conform to new National Trauma Databank (NTDB) data submission requirements. Comorbidity and complications fields were removed in accordance with NTDB requirements, and replaced with yes/no indicator fields. The option to enter 'not recorded' or 'unknown' for some fields was added and new fields were included to allow entry of Initial Field GCS, if collected. The Drug Screen field was also updated to capture when a patient had more than five classes of drug detected on a toxicity screen. Finally, the edit check on a small number of fields were adjusted to require a high level of completion in each quarterly submission. During FFY2020 the Trauma Registry will work with the TRCC to provide performance measure and data quality management reports.

During FFY 2020, a procurement process was completed to select a vendor to modernize the trauma registry data submission process, allowing for timelier, complete, and accurate trauma data submission and analysis. A new vendor was selected and a new system will be implemented. The MDPH portal used since 2008 will not be used for data submissions for FFY 2021 forward. The portal will continue to accept submission for FFY 2020 and earlier to allow complete submissions for FFY 2016-2020. The new trauma registry system will be a web-based interface allowing for direct entry and data upload of trauma submissions. There will be built-in reporting for facility and state level users and is produced by a United States Trauma Vendor Association member. Reporting will support data quality activities intended to provide real time feedback on trauma data submissions to ensure accurate and complete data. State level reports available to

Death Certificates – The Massachusetts Registry of Vital Records and Statistics collects certificates for all deaths that occur within Massachusetts as well as deaths of Massachusetts residents that occur outside of the Commonwealth. Vital Information Partnership (VIP) is the electronic death registration system. Relevant data include ICD-10 diagnostic codes for underlying and secondary causes of death (which describe injury cause, MV-person type, the nature and body location of injuries and other conditions present) patient demographics and date of death.

Behavioral Risk Factor Surveillance System (BRFSS), Youth Risk Behavior Survey (YRBS) and Youth Health Survey (YHS) – These anonymous surveys collect statewide estimates on self-reported behaviors either annually (BRFSS) or bi-annually (YRBS and YHS). The BRFSS is a telephone survey administered to a sample of adult MA residents ages 18 and up. The YRBS and YHS are written surveys administered to a sample of MA public high school students, with the YHS also administered to public middle school students. Specific questions related to motor vehicle injuries include seat belt use (BRFSS, YRBS, YHS), riding in a car driven by someone who had been drinking alcohol (YRBS, YHS middle school), riding in a car driven by someone who had been smoking marijuana (YHS middle school), driving a car after drinking alcohol (BRFSS, YRBS,YHS), driving a car after smoking marijuana (YHS), talk on a cell phone while driving (YRBS), texting while driving (YHS), texting or emailing while driving (YRBS) and drowsy driving (YHS). Responses can be broken down by respondent demographics and other risk behaviors.

System Performance Measurement(s)

MDPH has a benchmark/performance measure to evaluate the completeness of the MATRIS data by tracking the number of ambulance services submitting Version 3 reports to the system. **For FFY 2020, the benchmark/performance measure was to improve completeness of MATRIS by increasing the number of ambulance services submitting NEMSIS Version 3 reports to the system from 8 between 4/1/18 to 3/31/19 to 220 or more between 4/1/19 to 3/31/20. As of 3/31/20, 213 out of 313 licensed Ambulance services had migrated and were submitting data to MATRIS NEMSIS V3 and 251 were approved to make the migration.**

MDPH has a benchmark/performance measure to evaluate the timeliness and completeness of the Trauma Registry (TR) by tracking failed electronic submissions

from hospitals before a successful submission to the system occurs. For FFY 2019, the benchmark/performance measure was to improve timeliness and completeness of the TR by decreasing the number of failed electronic submissions from hospitals from > 3 failures before a success (based on NTDS as the primary requirement) during the baseline period of 4/1/17 to 3/31/18 to ≤ 3 failures before a success during the performance period 4/1/18 to 3/31/19.

During the baseline period of 4/1/2017-3/31/2018, on average, there were 5 failures for 2016 submissions and 2 failures for 2017 submissions before successful data submission. From 4/1/2018 to 3/31/2019, there were on average 2 failures for 2017 submissions and 1 failure for 2018 submissions before a facility successfully submitted data. Overall this represents an improvement over the baseline period, demonstrating that facilities are successfully submitting data in fewer tries. During this period, MDPH provided technical assistance to facilities who experienced difficulties with submissions. For FFY 2019 significant changes are being made to the Registry, which may impact measure performance until facilities have developed extracts that contain new fields.

MDPH has a benchmark/performance measure to evaluate the timeliness of the TR by tracking 'trial and error" electronic submission time for hospitals during the annual updates of ICD-10 coding and NTDS data dictionary changes. For FFY 2019, the benchmark/performance measure was to improve the timeliness of the TR by decreasing the 'trial and error' electronic submission time for hospitals during the annual updates of ICD-10 coding and NTDS data dictionary changes (2016 to 2017/2018) from 9 + months during the baseline period of 4/1/17 to 3/31/18 to 5 months during the performance period 4/1/18 to 3/31/19.

During the baseline period, there were too few successful submissions to create a reliable measure for comparison. Instead, data submissions were separated into TR submissions for 2016, 2017, and 2018 and the trial and error period was calculated for submissions from 4/1/2018-3/31/2019. For TR year 2016 submissions, facilities had a mean trial and error time of 13 months, compared to 3 months for submission year 2017, and 1 month for submission year 2018.   This demonstrates that the trial and error period has decreased considerably over the three most recent Trauma registry iterations

The trial and error and pass/fail benchmarks for the TR have been retired due to the dramatic change in data elements from FFY 2018 to FFY 2020.

Proposed FFY 2021 Performance Measures – MA Trauma Registry

Performance measure 1: Number and percentage of trauma designated facilities currently up-to-date on data submissions. Once submissions to the newly implemented registry have begun, the TR program will track trauma reporting by quarter and quantify the number of facilities submitting data within three months of quarter closure. The benchmark is 0 facilities submitting trauma data within three months of quarter close.

Performance measure 2: Number and percentage of community hospitals currently up to date on data submissions by trauma center designation. Once submissions to the newly implemented registry have begun, the TR program will track trauma reporting by quarter and quantify the number of facilities submitting data within three months of quarter closure. The benchmark is 0 facilities submitting trauma data within three months of quarter close.

The MDPH Injury Surveillance Program recently assessed the quality of external cause of injury codes (E-codes) in FY 2016 – FY 2018 Hospital Case-mix data. E-code rates in injury cases remained fairly high in ED visit data during this time period, ranging from 90% - 92%. E-code rates were lower in hospital discharge (75% - 78%), and observation stay data (7% - 46%). The decrease in E-code rates in hospital discharge and observation stay data may be partly due to the transition to ICD-10-CM. The Injury Surveillance Program will work with CHIA to identify strategies for improving hospital E-coding rates.

System Accessibility

MATRIS data is summarized and reported for quarterly opioid surveillance statistics. These reports are posted to the Mass.gov website and available to the public at https://www.mass.gov/lists/current-opioid-statistics.   The MATRIS NEMSIS V3 data are being incorporated into the DPH Public Health Information Tool which will allow the public to extract aggregate de-identified data from the website. Data use agreements have been completed and data sets are being prepared to contribute.   In SFY 2021 the data will also be submitted to the NEMSIS national repository making it accessible for the national dashboards and available for national IRB use.

The newly-procured Massachusetts TR is intended to be more user friendly and allow for easier data submissions. By selecting a national trauma vendor

who adheres to the IDTX trauma submission format, the new TR will streamline submissions for trauma centers using hospital based trauma vendor software. Community hospitals with no trauma registry will receive DPH and vendor based support submitted their data.

The MDPH Injury Surveillance Program (ISP) uses MA Hospital Case-mix, Death, BRFSS, YRBS, and YHS data to analyze MV-traffic injuries and risk factors, and produces and disseminates various data products that include MV injury data. These data are available to the public at: https://www.mass.gov/injury-surveillance-program.

Traffic safety stakeholders and others can also make specific data requests to ISP. ISP also frequently presents MA MV injury data at stakeholder meetings, such as MA Strategic Highway Safety Plan Emphasis Area workgroups and MA Traffic Safety Coalition meetings.

Training & Technical Assistance Opportunities

The Massachusetts TR procurement includes training for all hospital based users. Once TR implementation is complete, training will be provided by the vendor.

Recent Developments & Challenges

In FY 2020 the migration of ambulance services from NEMSIS V2 to NEMSIS V3 required that the services had submitted all of their data to NEMSIS V2 from 2013 until the date they migrated. Ambulance services that had previously used 3rd party software vendors that no longer support their products and do not have a NEMSIS V3 offering posed a significant challenge for locating and importing missing data. Supporting services through the process was more complex and took longer than anticipated with extensive outreach efforts from all levels of management.

A Trauma Registry Legacy dataset, combining all registry data through federal fiscal year (FFY) 2015, has been compiled and shared with the Injury Surveillance Program for linkage to other data sources. These data are being checked for quality and completeness and have been included in updates and analyses for the Trauma Systems Committee that meets on a quarterly basis. A data dictionary for the legacy dataset has been developed and reviewed and data specification guides are released annually to inform facility data submission.

Upgrades to MATRIS with NEMSIS V3 will include new fields that will facilitate matching of MATRIS and Trauma Registry data, linking EMS and hospital interventions.

2.7 Data Use and Integration

- UMassSafe's Data Linkage Project linked EMS and Crash Data was concluded in December 2018. A final project report from March 2019 is available at www.mass.gov/service-details/traffic-records. Additional information about this project can be found in Section 4.

- In FFY 2019 a MassDOT-MDPH's Statewide Crash-Injury Data Linkage Project on Mass Roadways worked to validate and improve the data linkage algorithm and begin analysis of driver alcohol and drug impairment. Through a medical record review, the MDPH Injury Surveillance Program (ISP) identified valid reasons why Hospital Discharge cases did not match any crash record in about 75% of non-matching cases, e.g. the crash occurred out-of-state or the visit was a follow-up. The medical record review also revealed that many true matches were being excluded from the linked dataset due to missing sex in Crash data and the same individual having different addresses in each dataset. The linkage algorithm was revised to allow for missing sex and not require a location match. Subsequent linkage rates by person-type increased by 15-17 percentage points. Linkage rates with Crash data and Hospital Discharge data, based on hospitalized persons, were: 61% of MV-occupants, 53% of motorcyclists, 48% of cyclists and 44% of pedestrians. Currently ISP is developing indicators for alcohol and drug use by MV drivers and motorcycle operators in the linked Crash-Hospital Discharge data, and developing SAS programming to link data from all persons involved in a crash. Additional information about this project can be found in Section 4.

  Significant progress has been made with this data linkage project, which is now named the MA Crash-Related Injury Surveillance System (CRISS). Currently the MDPH Injury Surveillance Program (ISP) has linked 2012-2017 MA crash data with all three MA Hospital Case-mix data sets (hospital discharges, ED visits, and observation stays). ISP has conducted several analyses of these data, which focused on alcohol

and drug intoxication in hospitalized drivers and non-motorists; driver and crash-related factors associated with sustaining a traumatic brain or spinal cord injury in a crash; driver and crash-related factors associated with higher hospital charges; and association between selected driver's medical conditions and risk of multiple crashes. ISP has developed several data briefs based on these results, which will be disseminated broadly to traffic safety stakeholders after completing the MDPH review process.

The MDPH ISP also received a one-year grant from the Centers for Disease Control and Prevention (CDC) in 2019 that supports steps to link additional data sets to MA CRISS. These steps include establishing data use agreements, accessing new data sources, and developing and validating data linkage algorithms. Additional data sources that ISP plans to link to MA CRISS are Trauma Registry, MA Ambulance Trip Record Information System (MATRIS), Death Certificate, Post-mortem Toxicology, Drivers License/History, and Citation/Adjudication data. ISP hopes to complete data use agreements for these data sources in 2020.

In 2019 the MA Department of Public Health released the Population Health Information Tool (PHIT) at www.mass.gov/guides/phit-data-injuries-in-massachusetts. This tool allows the public to query MA health data. The PHIT includes data on unintentional MV-traffic hospitalizations, ED visits and deaths for MV-occupants, motorcyclists, cyclists and pedestrians. The website can provide maps and graphs of selected data. Data can be broken down by sex and geographic region. Currently 2007-2014 MA data are available.

In addition, work is underway to integrate MATRIS data into PHIT during FFY 2021. This will allow more detailed data exploration of MATRIS data by the public. Data can be displayed and aggregated by geographic regions, or by demographic characteristics.

- MassDOT's upgraded its Crash Data Portal in summer 2019. The new version, known as Interactive Mapping Portal for Analysis and Crash Tracking (IMPACT), is at https://apps.impact.dot.state.ma.us/cdp/home.

2.8 Related Planning Documents

- MassDOT: State Highway Safety Plan, Highway Safety Improvement Plan, Safety Data Business Plan

- MA State Police: Commercial Motor Vehicle Plan

- MDPH: MA Youth Risk Behavior Survey and the MA Youth Health Survey

- OGR: Highway Safety Plan, Safety Belt Survey and Cell Phone Survey

3.0 Traffic Records Assessment

In January 2019, OGR with TRCC assistance finished a NHTSA-approved Traffic Records Self-Assessment for Massachusetts, guided by NHTSA's *Traffic Records Program Assessment Advisory, 2018 Edition*. NHTSA requires states to conduct or update an assessment of their highway safety data and traffic records systems every five years in order to qualify for federal Section 405(c) grant funding from NHTSA.

This section includes the resulting recommendations from the 2019 assessment. After each one there is information (bolded and underlined) about what Massachusetts is or is not planning to do in regards to the recommendation in FFY 2021.

Where action is being taken, the entry will highlight if the effort involves a Section 405-c funded project included in OGR's proposed FFY 2021 Highway Safety Plan and in Section 4 of this plan. Such an entry needs to address an unmet recommendation from the 2019 assessment, improve a minimum of one performance attribute (accessibility, accuracy, completeness, integration, timeliness, and uniformity) of a core system, and have at least one benchmark and performance measure. Ideally the project also provides a benchmark and performance measure that can demonstrate quantitative improvement in an attribute of a core system as described in the Section 405-c FAST Act funding guidance.

If the Commonwealth is unable to address a recommendation in FFY 2021, this must be explained (bolded and underlined) below in this section. Work being done to address these recommendations in early 2020 or to apply for a 405-c funding opportunity at that time was negatively impacted by COVID-19 state of emergency. Even if not specifically cited below, it is anticipated COVID-19 will continue to have a detrimental impact on efforts to address these recommendations at least for the rest of 2020.

With its FFY 2021 Section 405-c application, Massachusetts is proposing two performance measures to show quantitative improvement in performance attributes of core systems. These measures were developed using NHTSA's *Model Performance Measures for State Traffic Records Systems, 2011 edition* and the Section 405-c FAST Act funding guidance. These measures were also

provided to NHTSA separately in Interim Progress Reports as part of our 405-c application.

The first measure shows improvement in the timeliness for the RMV's Crash Data System (CDS) by tracking, for three types of allowable reporting methods, the average number of days from crash incident to when a resulting crash report from a state or local police agency is included in the CDS. The improvement in timeliness of the CDS was a reduction in the average number of days from crash incident to inclusion in the CDS from 71 days between 4/1/18 to 3/31/19 to 64 days between 4/1/19 to 3/31/20.

Also, though overall crash reporting went down between the baseline and performance periods, likely in part because of a staff shortage in the reporting section of the state's second largest police department and COVID 19 impacts statewide near the end of the performance period, e-reports as a percentage of the total number of reports increased during performance period (90.3% up to 92%) and paper reports declined (9.62% down to 7.85%).

The second measure shows improvement in completeness of the MDPH's Massachusetts Ambulance Trip Record Information System (MATRIS). The improvement achieved was an increase from 8 ambulance services with National Emergency Medical Services Information System (NEMSIS) compliant electronic data collection modules and software submitting Version 3 data records to MATRIS between 4/1/18 to 3/31/19 to 213 services between 4/1/19 to 3/31/20.

Developing similar measures for other core systems and projects of the Commonwealth will be a focus for our TRCCs in FFY 2021.

OGR conducted in early 2020 an Availability of Grant Funds (AGF) process to identify new projects to use FFY 2020 and earlier Section 405-c funding. Five resulting projects to address recommendations from the 2019 Assessment were approved by NHTSA for the Massachusetts FFY 2020 Highway Safety Plan and are expected to be part of the FFY 2021 HSP. The five projects are referenced throughout the section below and in Section 4 of this plan.

3.1 Traffic Records Coordinating Committee Management

The 2019 assessment did not have any related recommendations for TRCC management.

However the TRCC still needs to continue to work on developing benchmarks and performance measures for four of the six core traffic records systems. Also to better highlight and address unmet technical assistance and training needs for all six systems.

For the FFY 2021 405-c application, the Massachusetts TRCCs had to meet the requirement for receipt of Section 405-c funding by meeting a minimum of three times before the application submission. Since the submission of the last Section 405c application in July 2019, the ETRCC met on 1/13/20 and 5/18/20 and the WTRCC met on 2/5/20.

3.2 Strategic Planning

The 2019 assessment did not have any related recommendation for Strategic Planning.

3.3 Crash System

The 2019 Traffic Records Assessment identified the following recommendations:

1. *Improve the applicable guidelines for the Crash Data System (CDS) that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

   MassDOT/IT and RMV have kicked off the state-funded procurement effort for a new CDS. The Request for Response has been posted and more information will follow. This recommendation will be addressed in the new crash system. At this time no 405-c grant funded work on this recommendation   is   planned   for   FFY   2021.

2. *Improve the interfaces with the CDS that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

   The new CDS Request for Response will include the ability to interface between the new CDS and FARS that will provide more timely and complete fatality data in microcomputer data entry. At this time no 405-c grant funded work on this recommendation is planned for FFY 2021.

3. *Improve the data quality control program for the CDS that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

   Section 405-c funded projects to address this recommendation are listed in the FFY 2021 Highway Safety Plan and Section 4 of this plan under TR 21-01, TR 21-02, TR 21-03, TR 21-05, TR 21-06, and TR 21-10. Additional quality control measures for attributes will be addressed with the development of a new CDS.

3.4 Roadway

The 2019 assessment identified the following recommendations:

1. *Improve the data dictionary for the Roadway Data System (RDS) that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

   As reported in Section 2.2, MassDOT's Office of Transportation Planning continues work on its data dictionary for this system. At this time no 405-c grant funded work on this recommendation is planned for FFY 2021.

2. *Improve the data quality control program for the RDS that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

   MassDOT's Office of Transportation Planning has new GIS team member serving as GIS QC Coordinator. This position is now documenting our data management processes as well as developing metadata standards. GIS QC Coordinator meets regularly with Road Inventory editors to understand their workflows and install best

practices throughout the process. At this time no 405-c grant funded work on this recommendation is planned for FFY 2021.

3.5 Driver

The 2019 assessment identified the following recommendations:

1. *Improve the data dictionary for the Driver Data System (DDS) that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

   The RMV's new operating system, ATLAS, although rolled out in March 2018, is still being configured for reporting and data quality purposes. At this time no 405-c grant funded work on this recommendation is planned for FFY 2021.

2. *Improve the data quality control program for the Driver data system that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

   The RMVs new operating system, although rolled out in March 2018, is still being configured for reporting and data quality purposes. At this time no 405-c grant funded work on this recommendation is planned for FFY 2021.

3.6 Vehicle

The 2019 Traffic Records Assessment identified the following recommendations:

1. *Improve the interfaces with the Vehicle Data System (VDS) that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

   The RMV's new operating system, ATLAS, although rolled out in March 2018, is still being configured for reporting and data quality purposes. At this time no 405-c grant funded work on this

recommendation is planned for FFY 2021.

2. Improve the data quality control program for the VDS that reflect best practices identified in the Traffic Records Program Assessment Advisory.

   The RMV's new operating system is being implemented in two parts: Driver/person – March 2018, Vehicle - November of 2019. The new system has many quality control features. At this time no 405-c grant funded work on this recommendation is planned for FFY 2021.

3.7 Citation / Adjudication

The 2019 assessment identified the following recommendations:

1. *Improve the description and contents of the Citation and Adjudication systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

   The Merit Rating Board (MRB), the state-level organization with lead responsibility for the citation data system, has recently had to contend with a number of serious organizational challenges. These, along with interim leadership and COVID19 impacts, prevented MRB from applying recently for available 405-c grant funding to address this and other recommendations. At this time no 405-c grant funded work on this recommendation is planned for FFY 2021.

2. *Improve the data dictionary for the Citation and Adjudication systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

   The Merit Rating Board, the state-level organization with lead responsibility for the citation data system, has recently had to contend with a number of serious organizational challenges. These, along with interim leadership and COVID19 impacts, prevented MRB from applying recently for available 405-c grant funding to address this and other recommendations. **At this time no 405-c grant funded work on**

this recommendation is planned for FFY 2021.

3. *Improve the data quality control program for the Citation and Adjudication systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

The Merit Rating Board, the state-level organization with lead responsibility for the citation data system, has recently had to contend with a number of serious organizational challenges. These, along with interim leadership and COVID19 impacts, prevented MRB from applying recently for available 405-c grant funding to address this and other recommendations.

However, the MACCS project, managed by the Department of Criminal Justice Information Services, continues to improve data quality and timeliness of the Citation System by increasing the quantity and quality of eCitation submissions. With Section 405-c funding, their MACCS project will address this recommendation as described in the FFY 2021 Highway Safety Plan and Section 4 of this plan under TR-21-03.

3.8 Injury Surveillance/EMS

The 2019 assessment identified the following recommendations:

1. *Improve the interfaces with the Injury Surveillance systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

The RMV and DPH looked into creating an interface between EMS and RMV data for the Massachusetts Fatality Analysis Reporting System (FARS) project. A statute change is required to allow sharing of the EMS data. Other interfaces would require significant funding.

Currently the Trauma Registry has begun the work of linking Trauma Registry data with data sources that contain outcomes. The planned matches will use propensity score matching (a commonly used method) to link Death Data and Case Mix Hospital inpatient

and ED discharge data. An extract has been received of relevant Death Data and this match scheduled first, followed by an attempted Case Mix match.

A Section 405-c funded project to address in part this recommendation by linking MATRIS and Trauma Registry data is listed in the FFY 2020 Highway Safety Plan and Section 4 of this plan under TR-21-08.

2. *Improve the data quality control program for the Injury Surveillance systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

ED, hospital discharge, Vital Records have effective data quality control measures in place. MATRIS sends monthly data quality reports to all ambulance services and regularly works with ambulance services to improve their quality. MATRIS data quality control has further improved with the migration to NEMSIS V3 that allows for rejection of records that do not meet quality standards. In SFY 2021 MDPH plans to review the over 200 rules and make any needed revisions. Beginning in 2016, trauma data submitters receive automated data quality reports and whether a data submission was accepted. Additionally, in FFY 2020 the Trauma Registry plans to provide the TRCC with data quality reports.

Refinements were made to the FFY 2019 Trauma Registry and is expected to begin accepting submissions shortly. These included adding edit checks that require a higher level of consistency and completeness for several additional fields. Data submissions that do not meet the required level of completeness are returned to facilities for refinement and resubmission. FFY 2020 planning is already underway and includes a request for proposals for a new web based data collection system for this registry.

A Section 405-c funded project to address this recommendation is listed in the FFY 2020 Highway Safety Plan and Section 4 of this plan under TR-21-07.

3.9 Data Use and Integration

The 2019 assessment identified the following recommendation:

Improve the traffic records systems capacity to integrate data that reflect best practices identified in the Traffic Records Program Assessment Advisory.

A Section 405-c funded project to address in part this recommendation by linking MATRIS and Trauma Registry data is listed in the FFY 2020 Highway Safety Plan and Section 4 of this plan under TR-21-08.

This matter will also be addressed in FFY 2021 through further planning/discussion by the TRCC as well as the continuation of the MA Crash-Related Injury Surveillance System project by MDPH, which is currently funded by Mass-DOT (originally called the Statewide Crash-Injury Data Linkage Project on Mass Roadways) and the CDC. See Section 4 for further details of this project. See also Sections 3.3 and 3.8 for anticipated improvements that will address this recommendation.

4.0 Traffic Records Projects

This section lists projects planned for FFY 2021 as well as recently completed projects. This section details whether projects are funded through Section 405-c funding or other sources of funding.

For Section 405-c funded projects this section provides (bolded and underlined) key project updates as available, anticipated performance impact (i.e., improvements in accuracy, timeliness, accessibility, completeness, data integration, and uniformity), and how the project addresses, ideally with quantitative improvement, recommendations from the 2019 Traffic Records Assessment.

Below is a list of associated performance targets for FFY 2021:

Traffic Record Performance Target #1 – Decrease th**e** percentage of Massachusetts State Police-submitted crash reports with invalid or incomplete entries in Accepted with Warning (AWW) fields (utilizing criteria by RMV with Crash Data System data in UMassSafe Data Warehouse) from 3.7% as of 8/31/19 to 2.78% by 12/31/21. Provide mid-project progress toward the target as of 5/31/21.

Performance Target Justification: To improve the accuracy and completeness of crash reporting by the Massachusetts State Police by decreasing the percentage of State Police-submitted crash reports with invalid or incomplete entries in Accepted with Warning (AWW) fields (utilizing criteria by RMV with Crash Data System data in UMassSafe Data Warehouse) from 3.7% as of 8/31/19 to 2.78% by 12/31/21.

Traffic Record Performance Target #2 – Exceed the January to October 2020 benchmarks for the RMV FARS Unit - for timeliness, for completeness, and overall case quality – by 1% for January to October 2021. Provide mid-project progress toward the target as of 5/31/21.

Performance Target Justification: To improve accuracy, completeness, and timeliness of fatal crash reporting into MassDOT/Registry of Motor Vehicles' Crash Data System, exceed the January to October 2020 benchmarks for the RMV FARS Unit - for

timeliness, for completeness, and overall case quality – by 1% for January to October 2021.

Traffic Record Performance Target #3 – Install approximately 800 printers for the Motor Vehicle Automated Citation and Crash System in vehicles at an estimated 100 local law enforcement agencies by 9/30/21. Provide mid-project progress toward the target as of 5/31/21.

Performance Target Justification: To improve accuracy, completeness, and timeliness of citation and crash reporting into MassDOT/Merit Rating Board's Citation Data System and Registry of Motor Vehicles's Crash Data Systems, install approximately 800 printers for the Motor Vehicle Automated Citation and Crash System in vehicles at an estimated 100 local law enforcement agencies by 9/30/21.

Traffic Record Performance Target #4 – Decrease MA crash reports which are Accepted With Warning (AWW) by 3% as of 12/31/21. The development work needed to determine the baseline number has been significantly delayed due to COVID-19, therefore, the estimated time to have the baseline number determined is 1/31/21. A report on progress towards the target as of May 31, 2021 will be provided.

Performance Target Justification: During FFY 2021, several planned activities aimed at improving crash reports submissions (TR-21-01, -03, -05, -06, -10) are expected to include local police and/or state police. Having these police agencies involved in FFY 2021 Traffic Records project will help reduce the number of crash reports accepted with warnings to the RMV's Crash Data System. Therefore, a decrease in crash reports with AWW by 3% as December 31, 2021, is achievable.

NOTE: Through its AWW Part II Project, RMV will also strive to increase by 3% the percent of those MA crash reports which are resubmitted with corrections.

Traffic Record Performance Target #5 – Reduce the number of MA crash reports from state and local police that have incomplete/invalid data in any of the fields included in the RMV 2018/2019 Accepted With Warning initiative by 5% (2.2 relative percentage points) from 42.2% (10,676/25,295) for the period of 1/1/20 – 3/31/20 to 40% for the period of 7/1/21-9/30/21. Provide mid-project progress towards the target as of 5/31/21.

Performance Target Justification: The continuation of the RMV's Accepted With Warning Project (TR-21-05) in FFY 2021 will allow the RMV's LEL to increase communications and outreach to local police departments. As more police officers become aware of the need for accurate and completed crash reports, the number of invalid or incomplete entries will decline to the projected 40% by December 31, 2021.

Traffic Record Performance Target #6 - Increase the number of ambulance services submitting NEMSIS Version 3 reports to the Massachusetts Ambulance Trip Record Information System (MATRIS) from 213 as of 3/31/20 to 300 by 3/31/21 (or the number of licensed ambulance services in MA on 3/31/21).

Performance Target Justification: To improve the completeness of the Massachusetts Department of Public Health's Massachusetts Ambulance Trip Record Information System (MATRIS) by increasing the number of ambulance services submitting NEMSIS Version 3 reports to the system from 216 between 4/1/19 and 3/31/20 to 300 or more by 3/31/21 (or the number of licensed ambulance services in MA on 3/31/21).

Traffic Record Performance Target #7 - Increase Boston Police Department's electronic crash reporting to the RMV's Crash Data System from an estimated 7% rate in 7/1/20 to 70% or more by 9/30/21. Provide mid-project progress toward the target as of 5/31/21.

Performance Target Justification: To improve accuracy, completeness, timeliness, and uniformity of crash reporting into MassDOT/Registry of Motor Vehicles' Crash Data System, increase Boston Police Department's electronic crash reporting to the RMV's Crash Data System from an estimated 7% rate in 7/1/20 to 70% or more by 6/30/21.

4.1 FFY 2021 405-c Funded Projects

Motor Vehicle Automated Citation and Crash System (MACCS)

Highway Safety Plan Task TR-21-03
Executive Office of Public Safety and Security's Department of Criminal Justice Information Services
Budget: $490,161.46

MACCS is a browser-based application available statewide for the purpose of collecting, reconciling, and exchanging motor vehicle incident information including: electronic citation reporting, crash reporting, and traffic stop data collection. The MACCS project is the result of a partnership between EOPSS, local and state law enforcement, and MassDOT. The project has been funded with a combination of capital funds and grants from NHTSA. This project will increase the data quality of the crash and citation systems as called for in the 2019 Traffic Records Assessment.

The goals of the MACCS project are to ensure greater officer and citizen safety by making the reporting process more efficient at the roadside, improve data quality by implementing checks at the point of entry and upon submittal, and eliminate redundant data entry processes for agencies across Massachusetts.

The MACCS pilot commenced in July 2013 to field test the application and in-vehicle hardware (i.e. scanners, printers), identify deficiencies and potential improvements, and support proactive planning in the future potential roll-out of the MACCS system statewide. The MACCS application first went live with Billerica Police Department in April 2017.

Since October 2019, the Department of Criminal Justice Information Services (DCJIS) manages the MACCS project. In the past year, grant funding assisted with procurement and installation of in-vehicle printers, mounts, and paper, associated training, and MACCS software updates (such as those required to enable issuance of new citations relating to hand-frees use of electronic devices in motor vehicles). As of spring 2020, there are 67 local police departments and the Massachusetts State Police using MACCS.

Next Steps:

• Continue to support 90% of the costs of a full-time position at DCJIS to handle the day-to-day administration of the MACCS project. This will ensure further promotion of MACCS and installation of associated printers and training for additional law enforcement users. This position will also assist DCJIS management to secure further system enhancements.

• Approximately 800 additional printers and associated hardware will be provided to an estimated 100 local law enforcement agencies, along with necessary training and follow-up support.

• Further system enhancements will be made by a contractor to MACCS to enable the system to meet the yet to be identified needs of its law enforcement users.

This project will support the following performance target:

Traffic Record Performance Target #3 – Install approximately 800 printers for the Motor Vehicle Automated Citation and Crash System in vehicles at an estimated 100 local law enforcement agencies by 9/30/21. Provide mid-project progress toward the target as of 5/31/21.

Availability of Grant Funds for Traffic Safety Information Systems Improvement Grant Program, Section 405-c funded Projects

Highway Safety Plan Task TR-21-04
Executive Office of Public Safety and Security's Office of Grants and Research
Budget: up to $750,000 (NHTSA, Section 405c).

An Availability of Grant Funding (AGF) will be issued to provide FFY 2021 Section 405(c) funding on a competitive basis to quantifiable and measurable projects to improve the accessibility, accuracy, completeness, integration, timeliness, and/or uniformity (a performance attribute) of one or more of the following six core traffic records systems: crash data system, roadway inventory

file, vehicle registration, driver history, citation/adjudication, and injury surveillance system. Improving these systems will in turn enhance the ability to identify priorities for local, state, and federal traffic safety programs. Permissible projects could also evaluate the effectiveness of efforts to improve these six core traffic records systems; link these systems with other appropriate state or federal data systems; and enhance the ability of highway safety stakeholders to observe and analyze local, state, and national trends in crash occurrences, rates, outcomes, and circumstances. Only units of state and local government or not-for-profit organizations with a public purpose would be eligible to apply for funding. All funded projects must help to meet at least one unmet recommendation(s) from the Commonwealth's 2019 Traffic Records Assessment. Preference will be given to projects that have a minimum of one benchmark and one performance measure that will demonstrate at least one quantitative improvement to a performance attribute of a minimum of one of the state's six core traffic records systems. This quantitative improvement must be demonstrated with supporting information covering a 12-month performance period, starting anytime between April 1 and July 1, 2021, and comparable to a prior, contiguous benchmark period of one year. AGF responses would be reviewed by an OGR-selected AGF review committee and the Executive-level Traffic Records Coordinating Committee. Those projects approved for funding would then be submitted to EOPSS and then NHTSA for review and approval.

Each resulting projects will support one or more of the FFY 2021 performance targets listed above.

MATRIS and Trauma Registry Project Uniformity, Accuracy, and Integration Project

Highway Safety Plan Task TR-21-07
Massachusetts DPH
Budget: $175,000 (NHTSA, Section 405c)

This project will continue to enhance the accuracy, completeness, integration, timeliness, and/or uniformity of the Massachusetts Ambulance Trip Record Information System (MATRIS) and the Trauma Registry (TR). Key MATRIS deliverables would be complete migration of MATRIS data providers to NEMSIS Version 3, necessary updates to this software, and exploration of better hosting options for MATRIS V3. Major TR deliverables would be advancement of the

procurement process for a commercial-off-the-shelf system for a new TR application, related configuration/testing, as well as better data quality reporting and linkage efforts for the TR. This project, approved by the Massachusetts Traffic Records Coordinating Committees, will help to improve the data quality program for the EMS/Injury Surveillance System.

This project will support the following performance target:

Traffic Record Performance Target #6 - Increase the number of ambulance services submitting NEMSIS Version 3 reports to the Massachusetts Ambulance Trip Record Information System (MATRIS) from 213 as of 3/31/20 to 300 by 3/31/21 (or the number of licensed ambulance services in MA on 3/31/21).

Boston Cyclist, Pedestrian and Vehicular Incident Information System Enhancement

Highway Safety Plan Task TR-21-09
Boston EMS
Budget: $91,980.44 (NHTSA, Section 405c)

In the latest phase of this on-going project, Boston EMS will continue to promptly vet and validate roadway incidents involving bicyclists and pedestrians, enhance documentation of relevant data points, build upon just-in-time and canned reporting capabilities, and disseminate findings to inform injury prevention, transportation, and law enforcement efforts. This project continues collaborate between Boston EMS, Boston Police Department, and Boston Department of Innovation Technology to enhance integration and reporting of related data. All these efforts enhance the city's on-going efforts to improve public awareness of and infrastructure improvements for greater bicyclist and pedestrian safety. An annual report on roadway incidents involving bicyclists and pedestrians documented by Boston EMS through this project will be issued. This project improved the data quality control program for the EMS/Injury Surveillance system as recommended in the 2019 Traffic Records Assessment.

This project will support the following performance target:

Traffic Record Performance Target #6 - Increase the number of ambulance services submitting NEMSIS Version 3 reports to the Massachusetts Ambulance Trip Record Information System (MATRIS) from 213 as of 3/31/20 to 300 by 3/31/21 (or the number of licensed ambulance services in MA on 3/31/21).

After an Availability of Grant Funds in early 2020, the following five projects were launched in summer 2020 and will continue in FFY 2021.

Updating and Expanding MSP Crash Report Training Towards Improved Crash Data Quality Project

Highway Safety Plan Task TR-21-01
Massachusetts State Police
Budget: $164,810.89 (NHTSA, Section 405c)

This project will improve crash report training for Massachusetts State Police (MSP) recruits at the training academy and for current troopers through in-service training. MSP will be assisted in this project by the University of Massachusetts' traffic safety research program, UMassSafe. The project will begin with a review of current MSP crash report training and that done by other states, prior research available through the MA Crash E-Manual, and interviews with state crash data stakeholders. New curriculum development will follow, leading to a version for use at the academy with recruits, and one for in-service training with current troopers that has an online option. The project will enhance the accuracy, completeness, timeliness, and uniformity attributes of the crash data system of Massachusetts. This project will improve the data quality control program for the crash data system as called for in the 2019 Massachusetts Traffic Records Self-Assessment.

This project will support the following performance target:

Traffic Record Performance Target #1 – Decrease th**e** percentage of Massachusetts State Police-submitted crash reports with invalid or incomplete entries in Accepted with Warning (AWW) fields (utilizing criteria by RMV with Crash Data System data in UMassSafe Data Warehouse) from 3.7% as of 8/31/19 to 2.78% by 12/31/21. Provide mid-project progress toward the target as of 5/31/21.

Crash Reporting Improvement Project

Highway Safety Plan Task TR-21-10
Boston Police Department
Budget: $330,000 (NHTSA, Section 405c)

This project will improve electronic crash reporting by the Boston Police Department (BPD) by providing an application to officers to more easily submit crash data from field or office locations to BPD's records management vendor, and then on to the Registry of Motor Vehicles' crash data system. This project will also enhance BPD's ability to analyze crash data and to improve traffic safety and enforcement efforts. BPD will utilize city-funding to conduct officer training and other roll-out efforts for this project. The project will enhance the accuracy, completeness, timeliness, and uniformity attributes of the crash data system of Massachusetts. This project will improve the data quality control program for the crash data system as called for in the 2019 Massachusetts Traffic Records Self-Assessment.

This project will support the following performance target:

Traffic Record Performance Target #7 - Increase Boston Police Department's electronic crash reporting to the RMV's Crash Data System from an estimated 7% rate in 7/1/20 to 70% or more by 9/30/21. Provide mid-project progress toward the target as of 5/31/21.

Crash Data Accepted with Warning Part II Project

Highway Safety Plan Task TR-21-05
MassDOT/Registry of Motor Vehicles
Budget: $192,389.05 (NHTSA, Section 405c)

This project will build on the work to improve crash data quality begun through the Registry of Motor Vehicles (RMV) first Section 405-c funded Accepted With Warning (AWW) Project. Providing full-time administrative support for the RMV's Law Enforcement Liaison (LEL) will enable this position to spend more time with state and local law enforcement agencies to address crash data reporting challenges identified through their AWW reports. Using AWW analysis from the University of Massachusetts' traffic safety research program UMassSafe, the LEL will be able to prioritize the agencies to work with and the topics to address. All these efforts will reduce the number of crash reports submitted with incomplete

or invalid data and increase the number of AWW reports being corrected and resubmitted (and tracked through a new system). The project will enhance the accuracy, completeness, timeliness, and uniformity attributes of the crash data system of Massachusetts. This project will improve the data quality control program for the crash data system as called for in the 2019 Massachusetts Traffic Records Self-Assessment.

This project will support the following performance target:

Traffic Record Performance Target #4 – Increase acceptable resubmissions to Registry of Motor Vehicles' Crash Data System of previously rejected reports within a test group of 30 local police departments from benchmark to be established in October 2020 by 3% by 12/31/21. Provide mid-project progress toward the target as of 5/31/21.

Crash E-Manual Phase II Project
University of Massachusetts-Amherst/UMassSafe's
Highway Safety Plan Task TR-21-06
Budget: $184,898.93

This project will enhance the Massachusetts Law Enforcement Crash Report E-Manual's content and functionality as well as further promote its use. This online tool is available at masscrashreportmanual.com. This project will start by soliciting feedback from state and local law enforcement to determine the current content relevancy and usability of the tool. Google Analytics will be utilized to analyze site usage and promotional needs. The tool will then be updated and expanded, including an interactive overlay of the Massachusetts crash report form. Further promotion of the site will follow to encourage greater use by law enforcement and other traffic records stakeholders. The project will enhance the accuracy, completeness, timeliness, and uniformity attributes of the crash data system of Massachusetts. This project will improve the data quality control program for the crash data system as called for in the 2019 Massachusetts Traffic Records Self-Assessment.

This project will support the following performance target:

Traffic Record Performance Target #5 – Decrease the number of state and local police-submitted crash reports accepted with warning (AWW) for not having

complete/valid entries within 2019 AWW fields (queried with Crash Data System by UMassSafe) from 45% as of June 2019 to 30% by 12/31/21. Provide mid-project progress toward the target as of 5/31/21.

MA Trauma Registry, MA Ambulance Trip Record Information System Project

Highway Safety Plan Task TR 21-08
Massachusetts Department of Public Health
Budget: $226,800

This project of the Massachusetts Department of Public Health (MDPH) will enhance the accessibility, accuracy, completeness, and uniformity of the Massachusetts Ambulance Trip Record Information System (MATRIS) and the Trauma Registry (TR). Key MATRIS deliverables would be complete migration of MATRIS data providers to NEMSIS Version 3 standards and submission process as well as MATRIS data access through MDPH's web-based Population Health Information Tool (PHIT) available to local and state stakeholders. Major TR deliverables would be better quality assurance and quality control (QA/QC) reporting functionality to submitting facilities. Data linkage between the two systems would result from the project. This project will improve the data quality control program for the Injury Surveillance/EMS data system as called for in the 2019 Massachusetts Traffic Records Self-Assessment.

This project will support the following performance target:

Traffic Record Performance Target #6 - Increase the number of ambulance services submitting NEMSIS Version 3 reports to the Massachusetts Ambulance Trip Record Information System (MATRIS) from 213 as of 3/31/20 to 300 by 3/31/21 (or the number of licensed ambulance services in MA on 3/31/21).

4.2 Non-405-c Funded Projects

Fatality Analysis Reporting System (FARS)
Highway Safety Plan Task TR-21-02
Registry of Motor Vehicles
Budget: $82,000 (NHTSA Cooperative Agreement)

NHTSA will continue to be provided by the Registry of Motor Vehicles (RMV) with motor vehicle-related fatality data from Massachusetts for the national FARS and FastFARS through a dedicated RMV position. This FARS Analyst position will be supported with NHTSA as well as state funding. The Massachusetts FARS Manual will continue to be enhanced.

This project will support the following performance target:

Traffic Record Performance Target #2 – Exceed the January to October 2020 benchmarks for the RMV FARS Unit determined in February 2021 - for timeliness, for completeness, and quality – by 1% for January to October 2021. Provide mid-project progress toward the target as of 5/31/21.

MA Crash-Related Injury Surveillance System (CRISS)
MassDOT/Highway Division/Traffic Safety Section and MDPH's Injury Surveillance Program (ISP)
Budget for data analysis and data reports: up to $200,000 (FHWA)

Budget for new data sources: $249,995 (MDPH's Motor Vehicle Supplement grant to the State Violence and Injury Prevention Project based on federal funding from CDC)

Prior funding from MassDOT enabled the MDPH's ISP to conduct a pilot project to link 2012 Crash and Hospital Case-mix data (hospital discharges, ED visits, and observation stays) using deterministic linkage methods. The project successfully developed algorithms to link Crash and all three Case-mix data sets using six matching criteria. Based on the number of MV traffic-related injury cases in each Case-mix data set, the percentage of linked records was 48.3% in hospital discharge data, 42.2% in ED discharge data, and 43.9% in outpatient observation stay data.

Current funding from MassDOT has enabled ISP to link 2013-2017 crash and hospital case-mix data, conduct several analyses using the linked data, and develop data products for dissemination. The expanded data set is now called the MA Crash-Related Injury Surveillance System (CRISS). Please see Section 2.7 for additional details.

Funding from the CDC is supporting steps for ISP to access and link additional data sources to MA CRISS. As noted in Section 2.7, these data sources are Trauma Registry, MA Ambulance Trip Record Information System (MATRIS), Death Certificate, Post-mortem Toxicology, Drivers License/History, and Citation/Adjudication data. ISP hopes to complete data use agreements for these data sources in 2020. ISP is also developing a strategic plan for MA CRISS, to facilitate long-term sustainability of this integrated data system.

4.3 Projects Completed in FFY 2019 and 2020

Motor Vehicle Automated Citation and Crash System (MACCS)
Highway Safety Plan Task TR-20-03
Executive Office of Public Safety and Security's Criminal Justice Information Services
Budget: $490,161.46 (NHTSA, Section 405-c FAST) and
$269,471.89 (NHTSA, Section 405-c MAP 21).
Project ended September 30, 2020

MACCS is a browser-based application available statewide for the purpose of collecting, reconciling, and exchanging motor vehicle incident information including: electronic citation reporting, crash reporting, and traffic stop data collection. The MACCS project is the result of a partnership between EOPSS, local and state law enforcement, and MassDOT. The project has been funded with a combination of capital funds and grants from NHTSA. This project will increase the data quality of the crash and citation systems as called for in the 2019 Traffic Records Assessment.

The goals of the MACCS project are to ensure greater officer and citizen safety by making the reporting process more efficient at the roadside, improve data quality by implementing checks at the point of entry and upon submittal, and eliminate redundant data entry processes for agencies across Massachusetts.

The MACCS pilot commenced in July 2013 to field test the application and in-vehicle hardware (i.e. scanners, printers), identify deficiencies and potential improvements, and support proactive planning in the future potential roll-out of the MACCS system statewide. The MACCS application first went live with Billerica Police Department in April 2017.

As of spring 2020, there are 67 local police departments and the Massachusetts State Police using MACCS.

In FFY 2020 grant funding assisted with procurement and installation of in-vehicle printers, mounts, and paper, associated training, and MACCS software updates (such as those required to enable issuance of new citations relating to hand-frees use of electronic devices in motor vehicles). Also support for 90% of the costs of a full-time position at DCJIS to handle the day-to-day administration of the MACCS project. This position ensures further promotion of MACCS and installation of associated printers and training for additional law enforcement users as well as assist DCJIS management to secure further system enhancements.

Boston Cyclist, Pedestrian and Vehicular Incident Information System Enhancement
Highway Safety Plan Task TR-20-09
Boston EMS
Budget: $91,980.44 (NHTSA, Section 405c)
Project ended September 30, 2020

In the latest phase of this on-going project, Boston EMS continued to promptly vet and validate roadway incidents involving bicyclists and pedestrians, enhance documentation of relevant data points, build upon just-in-time and canned reporting capabilities, and disseminate findings to inform injury prevention, transportation, and law enforcement efforts. This project continued collaborate

between Boston EMS, Boston Police Department, and Boston Department of Innovation Technology to enhance integration and reporting of related data. All these efforts enhanced the city's on-going efforts to improve public awareness of and infrastructure improvements for greater bicyclist and pedestrian safety. An annual report on roadway incidents involving bicyclists and pedestrians documented by Boston EMS through this project was issued. This project improved the data quality control program for the EMS/Injury Surveillance system as recommended in the 2019 Traffic Records Assessment.

In late winter 2020, the project was suspended by Boston EMS due to COVID-19 impacts but expects to restart in summer 2020.

MATRIS and Trauma Registry National Standard Uniformity and Data Quality Project

Highway Safety Plan Task TR-21-08
Massachusetts DPH
Budget: $414,779 (NHTSA, Section 405c)
Project ended September 30, 2020

The Massachusetts Department of Public Health's Massachusetts Ambulance Trip Record Information System (MATRIS) is currently based on the National EMS Information System (NEMSIS) Version 2 data set standard developed in 2005.   The NEMSIS Technical Assistance Center developed a major revision to NEMSIS Version 3 (V3) released in 2011 which the industry has adopted and many states and ambulance services have already converted to. MATRIS will migrate to this new standard to continue collecting NEMSIS compliant data from ambulance services as the software vendors are sun-setting their V2 products. This project is in progress but needs additional funding to complete the effort and migrate over 320 ambulance services.

For the MATRIS NEMSIS V3 upgrade, a revised data dictionary incorporating the new national and state requirements of NEMSIS V3 as well as additional data elements and values identified as important for better injury prevention and performance measurement analysis and linkage was developed in 2018. NEMSIS V3 also incorporates a more rigorous and efficient data validation method, Schematron. This method enables the state to reject records upon import from ambulance services that do not meet edit rules resulting in better

data quality. In NEMSIS V2 validation edit rules are applied after import and only result in lower validation scores.

To implement NEMSIS V3, MATRIS upgraded the software platform and built out a new server environment at MassIT. Performance, vulnerability, ADA testing was conducted.   Configuration of an interface for ambulance services to manually enter and view their data in MATRIS was designed and tested internally and with pilot ambulance services**. <u>The system was launched 2/28/19 and as of March 2020 there are 213 services that have migrated and are submitting data to the MATRIS V3 system.</u>**

In NEMSIS V2 a subset of vendors provided the ability for ambulance services to automate data submission from their vendor ePCR systems to MATRIS; i.e. a file is automatically sent every night to MATRIS. With the migration to NEMSIS V3 all vendors are required to provide this functionality resulting in more timely, efficient and achievable data submission. All ambulance services submitting with 3rd party software use the webservices interface resulting in more timely submission of incidents, some being submitted the same day.

Ambulance services were trained in both manual and automated submission in the V3 environment. The migration for the ambulance services has been phased in as they migrate to their vendor's NEMSIS V3 compliant ePCR versions. During this migration period Massachusetts is collecting both V2 and V3 records until all services have completed the transition.

All hospitals are required to submit data to the Trauma Registry (TR) in accordance with Hospital Licensure regulations (105 CMR 130.851 and 105 CMR 130.852) and Circular Letters (DHCQ 08-03-483). Hospitals designated as trauma centers are held to the standards set by the American College of Surgeons' (ACS) National Trauma Data Standards (NTDS). The International Classification of Diseases, Tenth Edition (ICD-10 coding) was first implemented into the hospital coding on October 1, 2016. The ICD-10 coding has revisions to enhance and clarify the codes that are used by the trauma registrars and billing coders.   In order to keep current with the industry standards from both the NTDS and ICD-10 codes, this project will enable the TR to implement the annual ACS/NTDS and ICD-10 changes.

The current submission criteria that represents the 2016 requirements needs to be updated to include the 2017 criteria and anticipated 2018 submissions criteria changes for January 1, 2018. The pace of the changing criteria requires us to adjust to maintaining multiple submission criteria in the system. The system needs to maintain three change cycles to allow hospitals to catch up with submissions for the 2016 through 2018 quarters. Enhancements to include 2016, 2017, and 2018 submission criteria additions from NTDS and ICD-10 coding, plus submission logic to apply the requirements based on injury date are needed with data quality edits to allow TR personnel to provide better feedback to the hospitals.   These system upgrade requirements are needed as minimal standard operating enhancements for the state trauma registry to accept submissions from the hospitals. The current version of the system was built on borrowed infrastructure in another agency which is inflexible and requires Department of Public Health personnel resources to build and manage annual upgrades making them costly and inefficient in today's technological environment.

A web-based TR system with reporting capabilities will be set up to automatically send out timely quarterly reports to the submitting hospitals resulting in an increase in uniformity and quality of data reporting. It will have having a robust configurable GUI and editing capabilities with high quality user guides, release notes and support. The user guide will support uniformity and completeness of the data being sent by the hospitals to the state. The new system capabilities will free up resources to prioritize the annual maintenance of the state specification guidelines which will increase the accuracy and integration of the reporting data to meet the national standards and state requirements. As the data quality and accuracy improves over time, the data can be made accessible to internal and external customers as data requests, annual reports, research projects, data linkages, etc. The integration of the TR data with other datasets will help researchers, programs, and policy makers develop informed conclusions thereby helping to keep the Massachusetts population safer with target based interventions. Annual upgrades will fulfill the NTDS and other standard requirements as part of normal support and maintenance, which will ensure the timeliness of data submission and increase accessibility to the TR data. Once a vendor is selected to build the web-based system the project team will work with MassIT to define build and test the application infrastructure.

CDC grant funding is also covering a portion of the MATRIS NEMSIS V3 migration project.

All upgrades to the current TR have been completed and adjustments to maintain alignment with NTDB guidelines is now performed on an annual basis. Specification Guides were created to assist facilities in preparing TR data for both the 2016 and 2017/2018 reporting requirement. The upgrades included moving from IDC-9 to ICD-10, updates to the registry case definition, and the current portal sends automatically sends data quality assessments to facilities after submission. There is ongoing support for submission of 2016 and 2017/2018 trauma data and some technical assistance was provided directly to facilities in FFY 2019. The program anticipates closing 2016 submissions before the beginning of the FFY 2021. As part of FFY 2021 there will be an effort to share registry quality reports with the TRCC.

For FFY 2019, specifications were previewed to participating facilities and other partners. The same process is being followed for FFY 2020 to integrate feedback and recommendations from participating facilities and other partners.

A Request for Response process for a new, web-based TR application was completed. It is expected that this new platform will be rolled out before FFY 2021 data submissions begin.

The project enhanced the accessibility, accuracy, completeness, integration, timeliness, and uniformity of both systems.

Tools for Improving Crash Report Reviews
Highway Safety Plan Task TR-20-06
UMassSafe
Budget: $132,321 (NHTSA, Section 405c)
Project ended March 31, 2020.

The purpose of this project was to provide guidance and resources to supervisors in reviewing crash reports for completeness, accuracy and uniformity. Based on initial findings of the 2017 crash data audit (CDA), this project sought to enhance supervisory review of crash reports within a police department before they are submitted to the MassDOT RMV Division.

<u>Crash Narrative Guidelines</u>

Initial findings of the CDA demonstrated that there was a significant range in both the quantity and quality of content that was or was not included in crash report narratives. This lack of uniformity not only made it difficult for supervisors to use this information in reviewing crash reports for accuracy, completeness, and uniformity, but also posed a challenge for analysts and other highway stakeholders to use this information to better understand crash causation and plan effective safety countermeasures. UMassSafe conducted analyses of crash narratives across police agencies within the Commonwealth to identify commonalities and trends in narrative structure as well as determine which specific narrative elements of the crash narrative were most helpful to the supervisor for use in review. Key stakeholder interviews were also conducted. Findings were used in the formation of specific crash narrative guidelines. A pilot test with five local police departments and one MSP barracks was conducted to determine how their crash report narratives compare against the newly developed narrative guidelines.

<u>Supervisory Guidelines</u>

While there are numerous resources for officers filling out crash reports, including the Massachusetts Crash Report E-Manual, there are limited materials for supervisors who often have to review multiple crash reports each day. The CDA as well as the RMV's Accepted with Warning project found ten fields commonly left blank or incomplete, as well as common crash report accuracy and completeness errors that could be corrected at the reviewer level. With guidance from the RMV and MSP, and technical assistance from the RMV LEL, UMassSafe created materials to guide supervisors in their review and approval of crash reports before they are sent to the MassDOT RMV Division. These materials include:

- [Supervisor Guidelines](#)
- [Massachusetts Crash Report Narrative Guidelines](#)
- [Important Crash Report Elements](#)

In collaboration with MassDOT RMV Division's LEL, UMassSafe has promoted the new supervisor guidelines and associated materials via presentations at various Chief of Police meetings, LEL sharing during site visits, informational flyers, email blasts, social media promotion, and two webinars as well as the posting of these materials on the [Massachusetts Crash Report E-Manual](#).

These guiding materials, once they are fully implemented across the Commonwealth, will make crash narratives more accurate, complete, and uniform, resulting in higher quality crash data for use in improving roadways, as well as implementing more effective crash prevention programming and targeted enforcement.

Crash Data System Law Enforcement Liaison

Highway Safety Plan Task TR-20-05
MassDOT/Registry of Motor Vehicles
Budget: $108,019.56 (NHTSA, Section 405c)
Projected ended January 17, 2020.

This project provided additional funding for the Registry of Motor Vehicles (RMV) Crash Data System (CDS) Law Enforcement Liaison (LEL). In January 2020 the project was transition to newly available state funding to ensure longer-term the LEL activities. The LEL was in regular contact with state and local police on ways they could improve their reporting to the CDS, in particular to move from paper to electronic reporting. The LEL also worked with records management system vendors for police departments to improve reporting to the CDS. Other stakeholders the LEL connected with included major data users and those working to improve police training curriculum. This project improved the data quality control program for the CDS as recommended in the 2019 Traffic Records Assessment.

Motor Vehicle Automated Citation and Crash System (MACCS)

Highway Safety Plan Task TR-19-03
Executive Office of Public Safety and Security's Office of Technology and Information Services.
Budget for Implementation: Section 405c $544,034 and 402 was $490,161.46.
Budget for Printers: Section $375,896.99
Project ended September 30, 2019

MACCS is a browser-based application available statewide for the purpose of collecting, reconciling, and exchanging motor vehicle incident information including: electronic citation reporting, crash reporting, and traffic stop data collection. The MACCS project is the result of a partnership between EOPSS,

local and state law enforcement, and MassDOT. The project has been funded with a combination of capital funds and grants from NHTSA. This project will increase the data quality of the crash and citation systems as called for in the 2019 Traffic Records Assessment.

The goals of the MACCS project are to ensure greater officer and citizen safety by making the reporting process more efficient at the roadside, improve data quality by implementing checks at the point of entry and upon submittal, and eliminate redundant data entry processes for agencies across Massachusetts.

The MACCS pilot commenced in July 2013 to field test the application and in-vehicle hardware (i.e. scanners, printers), identify deficiencies and potential improvements, and support proactive planning in the future potential roll-out of the MACCS system statewide. The MACCS application first went live with Billerica Police Department in April 2017.

As of spring 2019, there are 43 local police departments and the Massachusetts State Police using MACCS.

In FFY 2019 grant funding assisted with procurement and installation of in-vehicle printers, mounts, and paper, associated training, and MACCS software updates.

Boston Cyclist, Pedestrian and Vehicular Incident Information System Enhancement

Highway Safety Plan Task TR-19-09
Boston EMS
Budget: $118,453 (NHTSA, Section 405c)
This project ended September 30, 2019.

In this latest phase of this continuing project, Boston EMS promptly vetted and validated EMS roadway incidents, enhanced documentation of relevant data points, built upon just-in-time and canned reporting capabilities, and disseminated findings to inform injury prevention efforts.

To increase transparency and public availability of data, Boston EMS, in coordination with the City of Boston's Department of Innovation Technology

and Transportation Division, now supports a publicly available data set of roadway incidents by location, time, and mode.

Through ongoing data vetting and near real-time alerting, Boston EMS has been an integral partner in the City's Vision Zero task force and the overall effort to reduce roadway incidents. The Transportation Division has used Boston EMS data to identify intersections and corridors requiring infrastructure improvements and used the data to support a city-wide speed limit reduction. Through this investment, Boston has seen a year over year reduction in cyclist incidents across the City. 2018 also showed a reduction in pedestrian incidents compared to the prior year.

Boston EMS collaborated with the Boston Police Department to develop a more comprehensive summary of roadway incidents. Boston EMS and the Boston Police Department use separate systems for records management, although both departments share a computer aided dispatch (CAD) system. Boston EMS is now able to capture the Police Department Incident number which will allow for enhanced integration and data reporting across departments.

An annual report on bicycle, pedestrian, and vehicular related crash, fatality, and injury data in 2018 was generated in spring of 2019.

Data Quality Review of Crash Reports Accepted with Warning and Technical Assistance to Police Departments to Improve Completeness and Reduce Errors

Highway Safety Plan Task TR-19-05

MassDOT/Registry of Motor Vehicles

Budget: $196,802 (NHTSA, Section 405c)
This project ended August 30, 2019.

A review of crash reports submitted to the RMV for the period of 2012 to 2014 found that 17% of crash reports have been accepted without warning, 72% accepted with warning and 11% rejected and sent back to police departments for further information. Currently, the RMV is developing methods for tracking crash reports that have been rejected and determining whether those reports were resubmitted.   However, further review is needed of the 72% of crash reports that are accepted with warning.

In order to reduce percent of crash reports accepted with warning and thus improve the completeness of crash data, the RMV Division and UMassSafe propose to conduct a quality control review of crash reports submitted by local and state police that are accepted by the RMV Division with warnings, in order to define what problems exist, and then work with police departments to address those problems.

Specifically, fields that are problematic for all crash reports accepted with warnings will be studied as well as those for individual police departments and/or Record Management Systems (RMS). These findings will be used to rank both police departments and RMSs, as well as to provide guidance and technical assistance to police departments in improving the data. These efforts are intended to reduce the percent of crash reports accepted with warning.

The goal of the project was to reduce the percent of crash reports that were accepted with warning from 72% to 60% in the first year, and a reduction to 50% by the end of the second year following the award; thereby improving the rate of completeness and accuracy of crash reports submitted by law enforcement agencies. At the end of the first year of the project, in March 2019, 9.75 % of the crash reports received were accepted with a warning.

Data Uniformity, Accuracy, Completeness and Timeliness

Highway Safety Plan Task TR-19-07
Massachusetts DPH
Budget: $180,000 (NHTSA, Section 405c)
This project ended June 30, 2019.

The Massachusetts Ambulance Trip Record Information System (MATRIS) is currently based on the National EMS Information System (NEMSIS) Version 2 data set standard developed in 2005. MATRIS must migrate to the new standard as NEMSIS no longer collects Version 2 data after 2016. The electronic patient care report (ePCR) vendor software used by ambulance services to collect and submit data to MATRIS will be migrated to the new version in the next year. DPH will need to upgrade the software platform and build out new server infrastructure. Funding will be used to expand and improve upon a process highlighted by the South Shore Hospital using MATRIS as a central location to

access trip records and perform quality assurance/quality improvement reviews for 10 ambulance services. The Trauma Registry (as well as all entities covered by the Health Insurance Portability and Accountability Act) must transition from the International Classification of Diseases version 9 to version 10. Funding will also be used for coordination and training with hospitals and vendors. Additional information about the system can be found in the summaries for the next two projects: "Trauma Registry Vendor and Database Hosting Upgrades" and "MATRIS and Trauma Registry Data Accuracy, Completeness, Uniformity and Accessibility."

The MATRIS medical directors Quality Assurance/Quality Improvement (QA/QI) review process that was started with South Shore was expanded to cover 18 medical directors and 121 ambulance services utilizing MATRIS to conduct QA/QI. This has resulted in improved quality, timeliness and accuracy of the data submitted by these services. The NEMSIS V3 system was launched during this budget project phase and ambulance services began migrating in March 2019.

As of October 1, 2015, the MA Trauma Registry requires ICD-10 codes for all reported traumas. All data submissions for FFY2016 - FFY2018 should include only ICD-10 codes, new data fields were built into the registry for this purpose and to maintain the historic ICD-9 data. As all Massachusetts hospitals have adopted ICD-10; the ICD-9 fields were retired in FFY 2019 and will no longer be available for submitting in historic data. For Trauma Centers FFY 2018 submissions have increased from partial submissions from 4 facilities in August 2018 to 14 facilities in April 2019.

Investigation of Improved Linkage Strategy towards the Development of a Central and Uniformed Crash Analysis Database
Highway Safety Plan Task TR-19-04
UMassSafe
Budget: $124,209 (NHTSA, Section 405c)
This project ended December 31, 2018

In order to improve the accessibility, integration, accuracy, completeness, and uniformity of Massachusetts data related to crashes, UMassSafe investigated

improved data linkage processes and strategies for linking highway safety data - crash, roadway inventory, citation, driver history (if available), emergency room, hospital and emergency medical services data. A completely linked dataset would enable highway safety specialists and analysts the unique ability to examine crashes with a complete sense of all related elements from beginning to end including the associated citations, medical consequences, and costs.

Project goals were:

- To provide a crash related linked dataset(s) using the core traffic record systems for improved accessibility, integration, accuracy, and completeness.
- To make accessible a minimum of two crash- related linked datasets for crash data analysis.
- To increase the number of core traffic record systems linked to each other from one to at least two.
- To identify a minimum of five common fields (identical or similar) among the core traffic records systems with discrepancies or incomplete data with recommendations for correction.

There were challenges with accessing the necessary health data. UMassSafe focused on conducting the linkage with EMS data while continuing to investigate improved linkage strategies. In the winter and early spring of 2018, UMassSafe received authorization and approval from the Massachusetts DPH IRB to access and utilize the Emergency Medical Services (EMS) data. In April of 2018, UMassSafe received the data. Ultimately a 58% linkage rate was achieved as well as crash data analysis and crash data quality analysis. A final report addressed key highway safety emphasis areas as well as issues related to data quality improvement such as that for improved accessibility, integration, accuracy, and completeness in addition to the ongoing investigation into improved linkage strategies. These project findings and those from a another data linkage project were presented to the Working-level TRCC in January 2019.

Please note that a list of Massachusetts 405-c funded traffic records projects completed prior to FFY 2019 is available from the Highway Safety Division.

4.4 Update on FFY 2020 Performance Targets

Below is an update on the work done to meet the performance targets in the FFY 2020 strategic plan:

Traffic Records Performance Target #1 - Develop a business plan for a new MassTRAC and have it approved by the TRCC by December 31, 2019.

Result: by late 2019 OGR and MassDOT agreed there was no need for the MassTRAC project as MassDOT was committed to expanding its new crash data portal (IMPACT) to include other key traffic records data sets as well as do further outreach and training to law enforcement on the portal.

Traffic Records Performance Target #2 - To improve the accuracy and completeness of the Registry of Motor Vehicles' Crash Data System by decreasing the number of crash reports rejected for not meeting the minimum criteria to be accepted into the system from 1,466 between April 1, 2018 to March 31, 2019 to 1,390 or less between April 1, 2019 to March 31, 2020.

Result: This goal was achieved as the number of crash reports rejected for not meeting the minimum criteria decreased from 1,466 as of March 31, 2019, to 1,021 by March 31, 2020.

However, through the RMV's 405-c funded Accepted With Warning project (TR 19-05), it has been determined that most reports rejected were not for reasons of accuracy or completeness. Instead, most were either duplicate reports or reports received after the reporting year was closed. These two reasons make up to 90% of the reports. When this measurement was initially chosen as one that needed to be addressed and corrected, it was due to the overwhelming number of rejected reports. It was essential to determine what mistakes needed to be addressed directly at the law enforcement agency.   Once analyses of the rejected reports were made through an automated process that pulls out the duplicate and closed year reports, the number decreased significantly to the revised measure of 'true' rejected reports:

A decrease was achieved from 256 "true" rejected reports that did not meet the minimum criteria as of 3/31/19 to 79 rejected reports as of 3/31/20.

Traffic Record Performance Target #3 - To improve completeness of MATRIS, increase the number of ambulance services submitting NEMSIS Version 3 reports to the system from 8 between April 1, 2018 to March 31, 2019 to 220 or more between   April   1,   2019   to   March   31,   2020.

Result: This goal was not achieved with the number of ambulance services submitting NEMSIS Version 3 reports to MATRIS increasing only from eight   as   of   March   31,   2019,   to   213   March   31,   2020.

NOTE: because of different reporting methods, MDPH's regular project reporting for MATRIS has this number as 211 as of 3/31/20, not 213, as reported above and is reflected in the Interim Progress Report for the FFY 2021 405-c Application for Massachusetts.